

**CITY OF FLAGSTAFF  
PUBLIC SAFETY DEVELOPMENT FEE STUDY  
DEVELOPMENT FEE REPORT,  
INFRASTRUCTURE IMPROVEMENTS PLAN,  
AND LAND USE ASSUMPTIONS**

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Prepared for:  
***City of Flagstaff, Arizona***



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## EXECUTIVE SUMMARY

The City of Flagstaff has engaged TischlerBise to update its Public Safety development fees for necessary public services pursuant to Arizona Revised Statutes 9-463.05. Municipalities in Arizona may assess development fees to offset infrastructure costs to a municipality associated with providing necessary public services to a development. The development fees must be based on an Infrastructure Improvements Plan. Development fees cannot be used for, among other things: projects not included in the Infrastructure Improvements Plan, projects related to existing development, or costs related to operations and maintenance.

This Infrastructure Improvements Plan and associated update to the City of Flagstaff Public Safety development fees include the following necessary public services:

- Fire
- Police

This plan includes all necessary elements required to comply with the Arizona Revised Statute 9-463.05.

### ARIZONA DEVELOPMENT FEE ENABLING LEGISLATION

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Arizona Revised Statute 9-463.05 (hereafter referred to as “development fee enabling legislation”) governs how development fees are calculated for municipalities in Arizona. During the state legislative session of 2011, Senate Bill 1525 (SB 1525) was introduced which significantly amended the development fee enabling legislation. The changes included:

- Amending existing development fee programs by January 1, 2012;
- Abandoning existing development fee programs by August 1, 2014;
- A new development fee program structure developed from a unified Land Use Assumptions document and Infrastructure Improvements Plan;
- New adoption procedures for the Land Use Assumptions, Infrastructure Improvements Plan, and development fees;
- New definitions, including “necessary public services” which defines what categories and types of infrastructure may be funded with development fees;
- Time limitations in development fee collections and expenditures; and
- New requirements for credits, “grandfathering” rules, and refunds.

Governor Brewer signed SB 1525 into law on April 26, 2011. This update of the City’s Public Safety development fees will comply with all of the new requirements of SB 1525.

### NECESSARY PUBLIC SERVICES

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The City of Flagstaff currently collects development fees for the following infrastructure categories:

- Fire
- Police

Under the new requirements of the development fee enabling legislation, development fees may be used only for construction, acquisition or expansion of public facilities that are necessary public services. “Necessary public service” means any of the following categories of facilities that have a life expectancy of three or more years and that are owned and operated on behalf of the municipality:

- Water Facilities
- Wastewater Facilities

- Storm Water, Drainage, and Flood Control Facilities
- Library Facilities
- Streets Facilities
- Fire and Police Facilities
- Neighborhood Parks and Recreational Facilities
- Any facility that was financed before June 1, 2011 and that meets the following requirements:
  1. Development fees were pledged to repay debt service obligations related to the construction of the facility.
  2. After August 1, 2014, any development fees collected are used solely for the payment of principal and interest on the portion of the bonds, notes, or other debt service obligations issued before June 1, 2011 to finance construction of the facility.

### INFRASTRUCTURE IMPROVEMENTS PLAN

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Development fees must be calculated pursuant to an Infrastructure Improvements Plan (hereafter referred to as the “IIP”). For each necessary public service that is the subject of a development fee, by law, the infrastructure improvements plan shall include the following seven elements:

*Element #1: A description of the existing necessary public services in the service area and the costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.*

*Element #2: An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.*

*Element #3: A description of all or the parts of the necessary public services or facility expansions and their costs necessitated by and attributable to development in the service area based on the approved land use assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in this state, as applicable.*

*Element #4: A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.*

*Element #5: The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.*

*Element #6: The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.*

*Element #7: A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved land use assumptions, and a plan to include these contributions in determining the extent of the burden imposed by the development.*

### QUALIFIED PROFESSIONALS

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The IIP must be developed by qualified professionals using generally accepted engineering and planning practices. A qualified professional is defined as “a professional engineer, surveyor, financial analyst or planner providing services within the scope of the person’s license, education, or experience.”

TischlerBise is a fiscal, economic, and planning consulting firm specializing in the cost of growth services. Our services include development fees, fiscal impact analysis, infrastructure financing analyses, user fee/cost of service studies, capital improvement plans, and fiscal software. TischlerBise has prepared over 800 development impact fee studies over the past 30 years for local governments across the United States.

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## DEVELOPMENT FEE REPORT

### CALCULATION METHODOLOGIES

Development fees for the necessary public services generated by new development must be based on the same level of service provided to existing development in the service area. There are three basic methodologies used to calculate development fees. They examine the past, present, and future status of infrastructure. The objective of evaluating these different methodologies is to determine the best measure of the demand created by new development for infrastructure capacity.

- **Cost recovery method (past)** is used in instances when a community has oversized a facility or asset in anticipation of future development. This methodology is based on the rationale that new development is repaying the community for its share of the remaining unused capacity.
- **Incremental expansion method (present)** documents the current level of service for each type of public facility. The intent is to use revenue collected to expand or provide additional facilities, as needed to accommodate new development, based on the current cost to provide capital improvements.
- **Plan-based method (future)** utilizes a community's capital improvement plan and/or other adopted plans or engineering studies to guide capital improvements needed to serve new development.

Figure 1 is a summary of the methodologies and components used to calculate the IIP and development fees.

Figure 1: Recommended Calculation Methodologies

Type of Necessary Public Services	Methodology		
	Cost Recovery (Past)	Incremental Expansion (Present)	Plan Based (Future)
Fire	<ul style="list-style-type: none"><li>• Facilities</li><li>• Apparatus</li><li>• Equipment</li><li>• Communications Infrastructure</li></ul>	<ul style="list-style-type: none"><li>• Vehicles</li><li>• Communications Equipment</li></ul>	Not Applicable
Police	<ul style="list-style-type: none"><li>• Communications Infrastructure</li></ul>	<ul style="list-style-type: none"><li>• Facilities</li><li>• Vehicles</li><li>• Communications Equipment</li></ul>	Not Applicable

### Reporting Results

Calculations throughout this Study are based on analysis conducted using Excel software. Formulas and results are discussed herein using one-and two-digit place (in most cases), which represent rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown in the Study (due to the rounding of figures shown, not in the analysis.)

## PUBLIC SAFETY DEVELOPMENT FEES

Based on the data, assumptions, and calculation methodologies in the [Land Use Assumptions](#) and Infrastructure Improvements Plans, the maximum supportable development fees are presented in the [Fire Facilities Infrastructure Improvements Plan](#), and [Police Facilities Infrastructure Improvements Plan](#) chapters, respectively.

Based on discussions with City Officials and staff, the development fees proposed for adoption, as shown in Figure 2, reflect two policy decisions regarding the City's public safety development fees presented in this Development Fee Study. The City will not:

1. Adopt a graduated fee schedule for single residential units based on the number of bedrooms per unit.
2. Collect development fees for previously made capital expansions funded through bonds.

Figure 2: Proposed City of Flagstaff Public Safety Development Fees

		Fire	Police	TOTAL Development Fee
<b>Residential</b>				
	<b>Number of Bedrooms</b>	~~~~~ Per Housing Unit ~~~~~		
2+ Units	All Sizes	\$170	\$342	\$512
Single Unit	Avg	\$182	\$366	\$548
<b>Nonresidential</b>		~~ Per Square Foot of Floor Area ~~		
Commercial		\$0.29	\$0.59	\$0.88
Office/Institutional		\$0.11	\$0.23	\$0.34
Industrial/Flex		\$0.03	\$0.08	\$0.11

Source: TischlerBise

## COMPARISON TO CURRENT DEVELOPMENT FEES

The City of Flagstaff currently collects development fees for the following infrastructure categories:

- Fire
- Police

The City's current development fees, effective as of January 1, 2012, are shown below.

**Figure 3: City of Flagstaff Development Fees, Effective January 1, 2012**

Current Development Fee Schedule		Fire	Police	Current Development Fee
Number of Bedrooms		~~~~~ Per Housing Unit ~~~~~		
<b>Residential</b>				
2+ Units	All Sizes	\$352	\$184	\$536
Single Unit	Avg	\$444	\$231	\$675
<b>Nonresidential [1]</b>		~~ Per Square Foot of Floor Area ~~		
Commercial		\$0.81	\$0.68	\$1.49
Office/Institutional		\$0.28	\$0.24	\$0.52
Industrial/Flex		\$0.07	\$0.06	\$0.13

Source: TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

[1] The 2012 nonresidential fees were by size thresholds, averages are shown here.

The changes between the proposed fees and the current fees are shown in the figure below. Note: the red figures in parentheses represent decreases in fee amounts.

**Figure 4: Changes Between City of Flagstaff Current and Proposed Development Fees**

		Net Change		
		Fire	Police	Development Fee
Number of Bedrooms		~~~~~ Per Housing Unit ~~~~~		
<b>Residential</b>				
2+ Units	All Sizes	(\$182)	\$158	(\$24)
Single Unit	Avg	(\$262)	\$135	(\$127)
<b>Nonresidential</b>		~~ Per Square Foot of Floor Area ~~		
Commercial		(\$0.52)	(\$0.09)	(\$0.61)
Office/Institutional		(\$0.17)	(\$0.01)	(\$0.18)
Industrial/Flex		(\$0.04)	\$0.02	(\$0.02)

Source: TischlerBise

## FIRE FACILITIES DEVELOPMENT FEES

Figure 5 shows the proposed Fire Facilities development fee schedule, which differs from the maximum supportable development fees discussed in the [Fire Facilities Infrastructure Improvements Plan](#) chapter due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

**Figure 5: Fire Facilities Development Fees**

<i>Fire Level Of Service and Capital Costs</i>	<i>Per Person</i>
Fire Vehicles	\$63.83
Fire Communications Equipment	\$0.63
IIP and Development Fee Study	\$1.93
<b>GROSS CAPITAL COST</b>	<b>\$66.39</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$66.39</b>

<i>Fire Residential Development Fee Schedule</i>			<b>Development Fee per Housing Unit</b>		
<i>Unit Type</i>	<i>Number of Bedrooms</i>	<i>Persons per Household [1]</i>	<i>Proposed Fee</i>	<i>Current Fee [2]</i>	<i>Increase (Decrease)</i>
2+ Units	All Sizes	2.57	\$170	\$352	(\$182)
Single Unit	Avg	2.75	\$182	\$444	(\$262)

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

<i>Fire Level Of Service and Capital Costs</i>	<i>Per Trip</i>
Fire Vehicles	\$19.94
Fire Communications Equipment	\$0.20
IIP and Development Fee Study	\$0.79
<b>GROSS CAPITAL COST</b>	<b>\$20.93</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$20.93</b>

<i>Fire Nonresidential Development Fee Schedule</i>			<b>Development Fee per Square Foot of Floor Area</b>		
<i>Nonresidential Land Use</i>	<i>Weekday Vehicle Trip Ends</i>	<i>Trip Rate Adj. Factors</i>	<i>Proposed Fee</i>	<i>Current Fee [3]</i>	<i>Increase (Decrease)</i>
	<i>(Per 1,000 sq. ft.)</i>		<i>(Per Square Foot of Floor Area)</i>		
Commercial	42.70	33%	\$0.29	\$0.81	(\$0.52)
Office/Institutional	11.03	50%	\$0.11	\$0.28	(\$0.17)
Industrial/Flex	3.82	50%	\$0.03	\$0.07	(\$0.04)

[3] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

The 2012 nonresidential fees were by size thresholds, averages are shown here.

## POLICE FACILITIES DEVELOPMENT FEES

Figure 6 shows the proposed Police Facilities development fee schedule, which differs from the maximum supportable development fees discussed in the [Police Facilities Infrastructure Improvements Plan](#) chapter due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

**Figure 6: Police Facilities Development Fees**

<i>Police Level Of Service and Capital Costs</i>		<i>Per Person</i>
Police Facilities		\$104.19
Police Vehicles		\$24.99
Police Communications Equipment		\$2.33
IIP and Development Fee Study		\$1.82
<b>GROSS CAPITAL COST</b>		<b>\$133.33</b>
<b>Revenue Credit</b>	0%	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$133.33</b>

<i>Police Residential Development Fee Schedule</i>			<b>Development Fee per Housing Unit</b>		
<i>Unit Type</i>	<i>Number of Bedrooms</i>	<i>Persons per Household [1]</i>	<i>Proposed Fee</i>	<i>Current Fee [2]</i>	<i>Increase (Decrease)</i>
2+ Units	All Sizes	2.57	\$342	\$184	\$158
Single Unit	Avg	2.75	\$366	\$231	\$135

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

<i>Police Level Of Service and Capital Costs</i>		<i>Per Trip</i>
Police Facilities		\$32.55
Police Vehicles		\$7.81
Police Communications Equipment		\$0.73
IIP and Development Fee Study		\$0.75
<b>GROSS CAPITAL COST</b>		<b>\$41.84</b>
<b>Revenue Credit</b>	0%	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$41.84</b>

<i>Police Nonresidential Development Fee Schedule</i>			<b>Development Fee per Square Foot of Floor Area</b>		
<i>Nonresidential Land Use</i>	<i>Weekday Vehicle Trip Ends</i>	<i>Trip Rate Adj. Factors</i>	<i>Proposed Fee</i>	<i>Current Fee [3]</i>	<i>Increase (Decrease)</i>
	<i>(Per 1,000 sq. ft.)</i>		<i>(Per Square Foot of Floor Area)</i>		
Commercial	42.70	33%	\$0.59	\$0.68	(\$0.09)
Office/Institutional	11.03	50%	\$0.23	\$0.24	(\$0.01)
Industrial/Flex	3.82	50%	\$0.08	\$0.06	\$0.02

[3] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

The 2012 nonresidential fees were by size thresholds, averages are shown here.

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## FIRE FACILITIES INFRASTRUCTURE IMPROVEMENTS PLAN

### OVERVIEW

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ARS 9-463.05 (T)(7)(f) defines the facilities and assets, which can be included in the Fire Facilities IIP:

*“Fire and police facilities, including all appurtenances, equipment and vehicles. Fire and police facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training police and firefighters from more than one station or substation.”*

The Fire Facilities IIP includes components for the Fire facilities, Fire fleet (vehicles/apparatus/equipment), and the Fire Department’s proportionate share of the City of Flagstaff public safety communications command center system (communications equipment and infrastructure), and the cost of preparing the Fire Facilities IIP and Development Fee Study. Cost recovery is used to calculate the IIP for the Fire facilities, apparatus, equipment, and communications infrastructure. Incremental expansion is used to calculate the Fire vehicles and communications equipment elements of the Fire IIP and Development Fees.

### SERVICE AREA

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The City’s Fire facilities and assets serve the entire city. The service area for the Fire Facilities IIP and development fees is Citywide.

### PROPORTIONATE SHARE

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ARS 9-463.05 (B)(3) states that the development fee shall not exceed a proportionate share of the cost of necessary public services needed to accommodate new development. The Fire IIP uses a proportionate share concept to allocate the demand between residential and nonresidential development. The demand for Fire facilities and assets in City of Flagstaff is measured by annual calls for service. Calls for service data from 2012, in combination with functional population factors (described below), were used to determine the relative demand for service from residential and nonresidential development.

## Functional Population

TischlerBise recommends functional population to allocate the cost of Fire Facilities to residential and nonresidential development. Functional population has a long history in the professional literature. Originally called activity analysis by Stuart Chapin in 1965, and incorporated into development impact fee methodology by James Nicholas in the mid-1980s, functional population has been used to equitably spread infrastructure costs between residential and nonresidential sectors. TischlerBise has refined the functional population concept by incorporating what the U.S. Census Bureau calls “daytime population.” Using jurisdiction-specific data on commuting patterns, it is now possible to account for where people live and work (i.e., spend their daily hours). As shown below, residents that do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Flagstaff are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Flagstaff are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2010 decennial census and Longitudinal Employer-Household Dynamics data, both provided by the U.S. Census Bureau, the cost allocation for residential development is 70 percent, while nonresidential development accounts for 30 percent of the demand for Fire Facilities.

**Figure 7: City of Flagstaff Functional Population**

	<u>Demand Units in 2010</u>		<u>Demand Hours/Day</u>	<u>Person Hours</u>
<b>Residential</b>				
Population	65,870			
Residents Not Working	36,843		20	736,860
Resident Workers	29,027			
Worked in City	17,161		14	240,254
Worked Outside City	11,866		14	166,124
Residential Subtotal				1,143,238 <b>70%</b>
<b>Nonresidential</b>				
Non-working Residents	36,843		4	147,372
Jobs Located in City	34,744			
Residents Working in City	17,161		10	171,610
Non-Resident Workers (inflow commuters)	17,583		10	175,830
Nonresidential Subtotal				494,812 <b>30%</b>
TOTAL				1,638,050

Source: U.S. Census Bureau, 2010 Decennial Census; U.S. Census Bureau, OnTheMap 6.1.1 Application and LEHD Origin-Destination Employment Statistics

## Service Units

The Fire Facilities costs are allocated to both residential and nonresidential development based on an analysis of functional population and calls for service. For residential development, fees are calculated on a per capita basis, and then converted to an appropriate amount by type of housing unit based on persons per household.

For nonresidential development fees, TischlerBise recommends using nonresidential vehicle trips as the demand indicator for Fire Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories. Because the Fire Department responds to emergency medical services calls for service this ranking of trip rates is consistent with the relative demand for Fire services from nonresidential development.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Fire development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator, Fire development fees would be too high for industrial development. More information regarding the calculation of nonresidential vehicle trips can be found in Figure 19: Fire Facilities Ratio of Service Unit to Land Use.

## Fire Department Calls for Service

The functional population allocation to residential (70%) and nonresidential (30%) development is applied to the 2012 calls for service data provided by the City of Flagstaff Fire Department to derive calls for service per service unit (i.e., population for residential development, and vehicle trips for nonresidential development). Of the Fire Department's 10,178 calls for service, 7,125 are assigned to residential development, and 3,053 are assigned to nonresidential development, based on functional population.

**Figure 8: Fire Facilities Proportionate Share**

	<b>2012</b>
<b>Total Calls for Service</b>	<b>10,178</b>

Source: City of Flagstaff, Fire Department

Land Use	Proportionate Share	Estimated Calls for Service (CFS)	2013 Service Units	CFS per Service Unit
Residential	70%	7,125	74,941 Population	0.10
Nonresidential	30%	3,053	102,819 Nonres Vehicle Trips	0.03

## Public Safety Communications Command Center Calls for Service

The City of Flagstaff shares a Public Safety Communications Command Center and associated infrastructure with Coconino County and surrounding public safety agencies. The shared command center received 71,475 calls for service from all jurisdictions in calendar year 2012. Calls for service for the City of Flagstaff Fire Department accounted for 14 percent of the total public safety calls for service received. This proportionate share factor will be used to calculate the demands placed on the *communications equipment* (e.g., portable communication radios, and stationary computer components) by the Fire Department.

Proportionate share factors for demands placed on the *communications infrastructure* (e.g., telecommunications towers for wireless network) by the Fire Department were provided by the City of Flagstaff Police Department based on use by the City's Fire, Police, and Public Works departments, and other jurisdictions. Proportionate share factors for *communications infrastructure* differ from *communications equipment* due to additional impact from Public Works. Proportionate share factors are shown below.

**Figure 9: Public Safety Communications Command Center Proportionate Share<sup>1</sup>**

Public Safety Agency	Calls for Service [1]	Proportionate Share for Communications	
		Equipment [1]	Infrastructure [2]
Flagstaff Police	43,304	61%	27%
Flagstaff Fire	10,178	14%	18%
Other Jurisdictions	17,993	25%	26%
Flagstaff Public Works	Not Applicable	0%	29%
<b>Total Calls Received in 2012</b>	71,475	100%	100%

[1] Proportionate share factors for Communications Equipment are based on total calls for service dispatched by the Public Safety Communications Command Center.

[2] Proportionate share factors (shown here as rounded figures) for Communications Infrastructure were provided by the City of Flagstaff Police Department. The City of Flagstaff Department of Public Works places demands on the communications infrastructure but not on the Public Safety Communications Command Center.

<sup>1</sup> The proportionate share factors by department for the *Communications Infrastructure* are shown as rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

## IIP FOR FIRE FACILITIES

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For each necessary public service that is the subject of a development fee, ARS 9-463.05(E) requires that the IIP include seven elements. The sections below detail each of these elements. (A forecast of new revenues generated by sources other than development fees can be found in **Appendix B – Forecast of Revenues Other Than Development Fees.**)

### Analysis of Capacity, Usage, and Costs of Existing Public Services

ARS 9-463.05(E)(1) requires:

*“A description of the existing necessary public services in the service area and the costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(2) requires:

*“An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

## Fire Facilities

### Level of Service

The City recently completed a multi-year plan to relocate and expand its Fire facilities. The current inventory of qualified Fire facilities totals 59,197 square feet, which includes excess capacity to serve future demand. The level of service (LOS) for Fire facilities is a measure of square feet per service unit. The current LOS for residential development is calculated as follows: (59,197 square feet X 70% residential proportionate share)/74,941 persons) = 0.55 square feet per capita.<sup>2</sup> This calculation is repeated for nonresidential development using 2013 nonresidential vehicle trips. The results are shown in Figure 10.

**Figure 10: Level of Service – Fire Facilities**

Facility [1]	Total Square Feet	Cost/SF	Replacement Cost
Station 1	7,913	\$520	\$4,114,760
Station 2	14,631	\$352	\$5,150,112
Station 3	9,340	\$333	\$3,110,220
Station 4	5,600	\$232	\$1,299,200
Station 5	7,913	\$487	\$3,853,631
Station 6	9,000	\$337	\$3,033,000
Station 10 (Airport)	2,800	\$250	\$700,000
Current Fire Mechanic Space	2,000	\$250	\$500,000
<b>TOTAL</b>	<b>59,197</b>	<b>\$368</b>	<b>\$21,760,923</b>

Source: City of Flagstaff Fire Department

[1] Reflects non-administrative space

Service Unit	Proportionate Share	2013	2020	2023
City Population	70%	74,941	80,918	83,025
	Square Feet Per Capita	0.55	0.51	0.50
Nonresidential Vehicle Trips	30%	102,819	109,630	112,683
	Square Feet per Nonresidential Vehicle Trip	0.17	0.16	0.16

Debt was issued in 2006 and 2012 to help fund the expansion of Fire facilities. As new development utilizes its proportionate share of the available capacity of existing Fire facilities, the City plans to have it pay a proportionate share of the remaining debt, scheduled to be retired in 2020 and 2023. As shown above, if no new Fire facilities are added and development occurs at the rate shown in the [Land Use Assumptions](#), the LOS for Fire facilities will change over the next ten years. The current LOS is 0.55 square feet per capita and 0.17 square feet per nonresidential vehicle trip. By 2023, the LOS for current Fire facilities will be 0.50 and 0.16 respectively.

<sup>2</sup> Level of service is shown as a rounded figure. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

### **Cost per Service unit**

Debt was issued in 2006 and 2012 to pay for the expansion of Fire facilities to the current square footage of 59,197. As new development utilizes its proportionate share of the available capacity of the Fire facilities, the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit by land use. Growth share is based on projected persons and trips at the end of each bond term.

The City of Flagstaff has a fiscal year that runs July 1<sup>st</sup> through June 30<sup>th</sup>. The final payments for Fire facilities debt are due July 1<sup>st</sup>, or the start of the fiscal year. Therefore, the service units at the time of the last July payment are used to calculate the growth share by land use for each debt schedule. The final payment for the 2006 Series A debt is due July 1, 2023. TischlerBise projects the City of Flagstaff will add 8,084 persons and see an additional 9,864 nonresidential vehicle trips between July of 2013 and 2023, which equates to 9 percent of the 2023 projected combined population and nonresidential trips. The formula to calculate growth share for the 2006 Series A debt is (195,708 population and nonresidential vehicle trips in 2023 – 177,760 population and nonresidential vehicle trips in 2013) / 195,708 population and nonresidential vehicle trips in 2023 = 9 percent (*rounded*).

The cost per service unit for residential development is calculated as follows: ((9% growth share x \$10,901,463 remaining principal and interest) x 70% residential proportionate share)/8,084 net increase in persons = \$84.96 cost per capita. This calculation is repeated for each land use and each debt obligation. The results are a combined cost per service unit for Fire facilities of \$109.18 per capita, and \$38.95 per nonresidential vehicle trip.

**Figure 11: Cost Recovery – Fire Facilities**

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
Series A	2006	2023	\$10,901,463

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2023 Service Units [3]	Cost per Service Unit
Residential	9%	70%	8,084 Population	\$84.96
Nonresidential		30%	9,864 Nonres Vehicle Trips	\$29.84

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
Series 2011	2012	2020	\$2,954,241

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2020 Service Units [3]	Cost per Service Unit
Residential	7%	70%	5,977 Population	\$24.22
Nonresidential		30%	6,811 Nonres Vehicle Trips	\$9.11

Source: City of Flagstaff, Finance Department

[1] Share of projected population and nonresidential vehicle trips attributable to new growth

[2] TischlerBise. (2013). Functional Population

[3] TischlerBise. (2013). Development Fee Land Use Assumptions

Land Use	Combined Cost per Service Unit
Residential	<b>\$109.18</b>
Nonresidential	<b>\$38.95</b>

## Fire Fleet - Vehicles, Apparatus and Equipment

### Level of Service

The City plans to maintain the current LOS for Fire vehicles, apparatus, and equipment. The City currently has a 37-unit fleet of Fire vehicles, apparatus, and equipment. Based on the proportionate share analysis discussed above, residential development creates 70 percent of the demand for the Fire fleet, with nonresidential development accounting for 30 percent of the demand. The current LOS for residential development is calculated as follows:  $((37 \text{ units} \times 70\% \text{ proportionate share}) / (74,941 \text{ persons} / 1,000)) = 0.35 \text{ vehicles per 1,000 persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.11 vehicles per 1,000 nonresidential vehicle trips.

**Figure 12: Level of Service Fire Fleet - Vehicles, Apparatus, and Equipment**

Type	Description	Units in Service	Unit Price [1]	Replacement Cost
Vehicle	Ladder Apparatus	1	\$895,034	\$895,034
Vehicle	Rescue - Heavy	1	\$560,867	\$560,867
Vehicle	TYPE 1 Engine	1	\$448,478	\$448,478
Vehicle	Pumper Apparatus	4	\$394,641	\$1,578,564
Vehicle	Type 1 Pumper	1	\$359,539	\$359,539
Vehicle	TYPE 3 Wildlands	3	\$358,000	\$1,074,000
Vehicle	Water Tender	2	\$270,000	\$540,000
Vehicle	HAZMAT Truck	1	\$251,392	\$251,392
Vehicle	Rescue - Medic	1	\$244,247	\$244,247
Vehicle	TYPE 6 Engine	2	\$130,000	\$260,000
Vehicle	TYPE 6 Brush Truck	2	\$130,000	\$260,000
Vehicle	Rescue - Light	1	\$43,220	\$43,220
Vehicle	Light Duty Vehicle	9	\$26,139	\$235,253
Vehicle	Heavy Duty Vehicle	3	\$24,657	\$73,972
Vehicle	Trailers	2	\$4,586	\$9,171
Apparatus	Aerial Truck (quint ladder)	1	\$800,000	\$800,000
Apparatus	Pumper Truck	1	\$359,539	\$359,539
Equipment	SCBA Equipment	1	\$220,358	\$220,358
Total Fleet		37	\$221,990	\$8,213,633

Source: City of Flagstaff Fire Department

[1] Reflects the unit cost at year of purchase adjusted for inflation to Feb 2013 CPI

Land Use	Proportionate Share	2013 Service Units	Vehicles, Apparatus and Equipment Per 1,000 Service Units
Residential	70%	74,941 Population	0.35
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.11

### **Cost per Service unit**

The cost per service unit for the incremental expansion of Fire vehicles is calculated in Figure 13. *The cost per service unit of Fire apparatus, and for Fire equipment are each calculated separately.* The City of Flagstaff debt financed the purchase of large Fire apparatus--an Aerial Truck and Pumper Truck--and Fire equipment for use in the entire service area. As new development utilizes its proportionate share of the available capacity of these apparatus and equipment units the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit for Fire apparatus, and for Fire equipment (explained below). The cost per service unit for Fire vehicles is calculated using an incremental expansion methodology.

### **Vehicles**

To calculate the cost per service unit for the 34 units of Fire vehicles, the replacement costs for the apparatus and equipment were subtracted from the total replacement cost of the Fire fleet for an adjusted value of \$6,833,736 for the Fire vehicles. The current cost of Fire vehicles per service unit for residential development is calculated as follows: ((34 vehicle units X 70% proportionate share) / (74,941 persons/1,000)) = 0.32 level of service X \$200,992 average cost per vehicle = \$63.83 cost per capita. This calculation is repeated for nonresidential development and results in a cost per service unit of \$19.94.

**Figure 13: Incremental Expansion – Fire Vehicles**

Type	Description	Units in Service	Unit Price [1]	Replacement Cost
Vehicle	Ladder Apparatus	1	\$895,034	\$895,034
Vehicle	Rescue - Heavy	1	\$560,867	\$560,867
Vehicle	TYPE 1 Engine	1	\$448,478	\$448,478
Vehicle	Pumper Apparatus	4	\$394,641	\$1,578,564
Vehicle	Type 1 Pumper	1	\$359,539	\$359,539
Vehicle	TYPE 3 Wildlands	3	\$358,000	\$1,074,000
Vehicle	Water Tender	2	\$270,000	\$540,000
Vehicle	HAZMAT Truck	1	\$251,392	\$251,392
Vehicle	Rescue - Medic	1	\$244,247	\$244,247
Vehicle	TYPE 6 Engine	2	\$130,000	\$260,000
Vehicle	TYPE 6 Brush Truck	2	\$130,000	\$260,000
Vehicle	Rescue - Light	1	\$43,220	\$43,220
Vehicle	Light Duty Vehicle	9	\$26,139	\$235,253
Vehicle	Heavy Duty Vehicle	3	\$24,657	\$73,972
Vehicle	Trailers	2	\$4,586	\$9,171
Apparatus	Aerial Truck (quint ladder)	1	\$800,000	\$800,000
Apparatus	Pumper Truck	1	\$359,539	\$359,539
Equipment	SCBA Equipment	1	\$220,358	\$220,358
	Total Fleet	37	\$221,990	\$8,213,633
	Total for Fire Vehicles	34	\$200,992	\$6,833,736

Source: City of Flagstaff Fire Department

[1] Reflects the unit cost at year of purchase adjusted for inflation to Feb 2013 CPI

Land Use	Proportionate Share	2013 Service Units	Vehicles Per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.32	<b>\$63.83</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.10	<b>\$19.94</b>

### Apparatus

The cost per service unit for the Fire apparatus (using the cost recovery methodology) is calculated using a growth share based on projected persons and nonresidential vehicle trips at the time of the last payment, July 1, 2019. Of the projected 188,870 combined population and nonresidential vehicle trips in 2019, 11,110 (6 percent) are attributable to new growth between 2013 and 2019. The formula to calculate growth share is as follows:  $(188,870 \text{ population and nonresidential vehicle trips in 2019} - 177,760 \text{ population and nonresidential vehicle trips in 2013}) / 188,870 \text{ population and nonresidential vehicle trips in 2019} = 6 \text{ percent (rounded)}$

The Fire apparatus cost per service unit for residential development is calculated as follows:  $((6\% \text{ growth share} \times \$289,122 \text{ remaining principal and interest}) \times 70\% \text{ residential proportionate share}) / 5,293 \text{ net increase in persons} = \$2.29 \text{ cost per capita}$ . This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.89.

**Figure 14: Cost Recovery – Fire Apparatus**

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
Fire Vehicles	2010	2019	\$289,122

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2019 Service Units [3]	Cost per Service Unit
Residential	6%	70%	5,293 Population	<b>\$2.29</b>
Nonresidential		30%	5,817 Nonres Vehicle Trips	<b>\$0.89</b>

Source: City of Flagstaff, Finance Department

[1] Share of projected population and nonresidential vehicle trips attributable to new growth

[2] TischlerBise. (2013). Functional Population

[3] TischlerBise. (2013). Development Fee Land Use Assumptions

### Equipment

The cost per service unit for the Fire equipment (using the cost recovery methodology) is calculated using a growth share based on projected persons and trips at the time of the last payment, July 1, 2023. Of the projected 195,708 combined population and nonresidential vehicle trips in 2023, 17,948 (9 percent) are attributable to new growth between 2013 and 2023. The formula to calculate growth share is as follows:  $(195,708 \text{ population and nonresidential vehicle trips in 2023} - 177,760 \text{ population and nonresidential vehicle trips in 2013}) / 195,708 \text{ population and nonresidential vehicle trips in 2023} = 9 \text{ percent (rounded)}$ .

The Fire equipment cost per service unit for residential development is calculated as follows:  $((9\% \text{ growth share} \times \$169,414 \text{ remaining principal and interest}) \times 70\% \text{ residential proportionate share}) / 8,084 \text{ net increase in persons} = \$1.32 \text{ cost per capita}$ . This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.46.

**Figure 15: Cost Recovery – Fire Equipment**

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
SCBA Equipment	2006	2023	\$169,414

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2023 Service Units [3]	Cost per Service Unit
Residential	9%	70%	8,084 Population	<b>\$1.32</b>
Nonresidential		30%	9,864 Nonres Vehicle Trips	<b>\$0.46</b>

Source: City of Flagstaff, Finance Department

[1] Share of projected population and nonresidential vehicle trips attributable to new growth

[2] TischlerBise. (2013). Functional Population

[3] TischlerBise. (2013). Development Fee Land Use Assumptions

### Fire Communications System - Equipment and Infrastructure

The City of Flagstaff maintains an inventory of portable and stationary communications equipment, and the communications infrastructure associated with the shared Public Safety Communications Command Center system. The shared center dispatches calls for the City of Flagstaff, Coconino County and surrounding public safety agencies, as well as providing communications infrastructure for the City of Flagstaff Department of Public Works. Each agency places differing levels of demand on the system. As discussed above, annual calls for service were used to calculate the share of the components allocated to the City of Flagstaff Fire Department; and functional population factors were used to calculate the demands placed on the system by residential and nonresidential land uses in the service area.

### **Level of Service**

There are two types of communications equipment associated with the shared system; first is the portable equipment assigned to staff and vehicles, and second is the computer equipment necessary to dispatch and track calls for service. Communications infrastructure includes the telecommunications towers for the wireless network.

Of the equipment and infrastructure that constitute the City of Flagstaff shared system, the City of Flagstaff Fire Department makes use of 51 components. Portable components used by the Fire Department are allocated to the Fire Department at 100 percent. Dispatch communications components like the computer system's server are allocated based on demand on the system generated by the Fire Department (14%), as determined by calls for service (see the Proportionate Share section above).

Demand placed on the *communications infrastructure* by the Fire Department was determined by the City of Flagstaff. According to the City, the Fire Department generates 18.41 percent of the total demand for the *communications infrastructure*. The remaining demand on the *communications infrastructure* is generated by the Flagstaff Police and Public Works Departments as well as from other jurisdictions.

As shown in Figure 16, these proportionate share factors are used to adjust the count of components to reflect only the share of the total 51 components used by the Fire Department. The Fire Department uses 100 percent of the 6 *portable communications* components, 14 percent of the 44 *dispatch communications* components, and 18.41 percent of the *communications infrastructure*. These shares equate to 12.34 units of communications equipment and infrastructure used by the Fire Department.

The communications equipment and infrastructure LOS for residential development is calculated as follows:  $(12.34 \text{ pieces of equipment} \times 70\% \text{ proportionate share}) / (74,941 \text{ person} / 1,000) = 0.12 \text{ pieces of equipment per } 1,000 \text{ persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.04 pieces of equipment per 1,000 nonresidential vehicle trips.

**Figure 16: Level of Service Fire Communications System - Equipment and Infrastructure**

Communications System Equipment and Infrastructure	Units in Service	Fire Dept. Share of Units [1]	Units Used by Fire Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	6	100.00%	6.00	\$5,733	\$34,400
Equipment - Dispatch Communications	44	14.00%	6.16	\$5,366	\$33,055
Infrastructure - Tower and Network [3]	1	18.41%	0.18	\$3,952,287	\$727,616
<b>TOTAL</b>	<b>51</b>		<b>12.34</b>	<b>\$82,800</b>	<b>\$795,071</b>

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Fire Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). Communications Infrastructure proportionate share

Land Use	Proportionate Share	2013 Service Units	Equipment & Infrastructure per 1,000 Service Units
Residential	70%	74,941 Population	0.12
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.04

### **Cost per Service unit**

The costs per service unit for the Fire *communications equipment* and *communications infrastructure* are calculated separately.

- **Communications Infrastructure:** The City of Flagstaff debt financed the expansion of the public safety *communications infrastructure* in 2011. As new development utilizes its proportionate share of the available capacity of the expanded system the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit for Fire *communications infrastructure* (shown in Figure 18).
- **Communications Equipment:** The cost per service unit for Fire *communications equipment* is calculated using an incremental expansion methodology.

### **Communications Equipment**

To calculate the cost per service unit for Fire communications equipment the replacement costs are calculated for each component by multiplying the per unit cost by the share of units allocated to the Fire Department. Next, the replacement value for just the *communications equipment* was calculated resulting in a value of \$67,455 for the Fire *communications equipment* alone. (*Communications infrastructure* is calculated and shown separately). The current cost of Fire *communications equipment* per service unit for residential development is calculated as follows: (\$67,455 replacement value X 70% proportionate share)/74,941 persons = \$0.63 per capita. This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.20.

**Figure 17: Incremental Expansion – Communications Equipment**

Communications System Equipment and Infrastructure	Units in Service	Fire Dept. Share of Units [1]	Units Used by Fire Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	6	100.00%	6.00	\$5,733	\$34,400
Equipment - Dispatch Communications	44	14.00%	6.16	\$5,366	\$33,055
Infrastructure - Tower and Network [3]	1	18.41%	0.18	\$3,952,287	\$727,616
<b>TOTAL</b>	<b>51</b>		<b>12.34</b>	<b>\$82,800</b>	<b>\$795,071</b>
<b>Total for Communications Equipment</b>	<b>50</b>		<b>12.16</b>	<b>\$5,547</b>	<b>\$67,455</b>

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Fire Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). Communications Infrastructure proportionate share

Land Use	Proportionate Share	2013 Service Units	Equipment per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.11	<b>\$0.63</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.04	<b>\$0.20</b>

### *Communications Infrastructure*

Debt was issued in 2011 to pay for the expansion of the Public Safety Communications Command Center infrastructure. As new development utilizes its proportionate share of the available capacity of the *communications infrastructure*, the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used, and the growth share is based on projected persons and trips at the end of the bond term.

The City's Fire, Police, and Public Works Departments use the *communications infrastructure*, along with surrounding public safety agencies. According to the City of Flagstaff, the Fire Department generates 18.41 percent of total demand on the infrastructure.

The City of Flagstaff has a fiscal year that runs July 1<sup>st</sup> through June 30<sup>th</sup>. The final payment for the *communications infrastructure* debt is due July 1<sup>st</sup>, or the start of the fiscal year. Therefore, the service units at the time of the last July payment are used to calculate the growth share by land use. TischlerBise projects the City of Flagstaff will add 6,670 persons and see an additional 7,811 nonresidential vehicle trips between July of 2013 and 2021, which equates to 8 percent of the 2021 projected combined population and nonresidential trips. The formula to calculate growth share is as follows:  $(192,241 \text{ population and nonresidential vehicle trips in 2021} - 177,760 \text{ population and nonresidential vehicle trips in 2013}) / 192,241 \text{ population and nonresidential vehicle trips in 2021} = 8 \text{ percent (rounded)}$ .

The cost per service unit for residential development is calculated as follows:  $(\$3,658,398 \text{ remaining principal and interest} \times 18.41\% \text{ Fire proportionate share} \times 8\% \text{ growth share} \times 70\% \text{ residential proportionate share}) / 6,670 \text{ net increase in persons} = \$5.65 \text{ cost per capita}$ . This calculation is repeated for nonresidential development and results in a cost per nonresidential vehicle trip of \$2.07.

**Figure 18: Cost Recovery – Fire Communications Infrastructure**

Debt Obligation		Year of Final Payment	Remaining Principal and Interest
Name	Year Issued		
Communications Equipment	2011	2021	\$3,658,398

Land Use	Portion Attributable to Fire Dept. [1]	Growth Share [2]	Proportionate Share [3]	Increase 2013-2021 Service Units [4]	Cost per Service Unit
Residential	18.41%	8%	70%	6,670 Population	<b>\$5.65</b>
Nonresidential			30%	7,811 Nonres Vehicle Trips	<b>\$2.07</b>

Source: City of Flagstaff, Finance Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Share of projected population and nonresidential vehicle trips attributable to new growth

[3] TischlerBise. (2013). Functional Population

[4] TischlerBise. (2013). Development Fee Land Use Assumptions

### **Excluded Costs**

Development fees in Flagstaff exclude costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City of Flagstaff Capital Improvement Plan addresses the cost of these excluded items.

### **Current Use and Available Capacity**

According to City staff, Fire facilities, apparatus, equipment, and communications infrastructure have surplus capacity to serve growth; therefore, a cost recovery methodology was used to calculate the growth share of future principal and interest payments. Fire vehicles and communications equipment are fully utilized; therefore, there is no available capacity for future development.

## RATIO OF SERVICE UNIT TO DEVELOPMENT UNIT

ARS 9-463.05(E)(4) requires:

*“A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.”*

Shown in the table below are the ratios of a service unit (i.e., persons and nonresidential vehicle trips) to various types of land uses for residential and nonresidential development. The residential development table displays the *Persons per Household* factors for single family and multifamily homes.

For nonresidential development, average daily vehicle trips are used for the Fire Facilities IIP as a measure of demand by land use. TischlerBise recommends using nonresidential vehicle trips as the best demand indicator for Fire Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories. Because the Fire Department responds to emergency medical calls for service this ranking of trip rates is consistent with the relative demand for Fire services from nonresidential development.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Fire Facilities development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator Fire Facilities development fees would be too high for industrial development.

**Figure 19: Fire Facilities Ratio of Service Unit to Land Use**

Residential Development	
Land Use	Persons per Household [1]
Single Unit	2.75
2+ Unit	2.57

[1] TischlerBise. (2013).

Development Fee Land Use Assumptions

Nonresidential Development			
Land Use	Weekday Trip	Trip	
	Ends [2] (a)	Adjustment [3] (b)	Vehicle Trips (a X b)
Commercial KSF	42.70	33%	14.09
Office/Institutional KSF	11.03	50%	5.52
Industrial/Flex KSF	3.82	50%	1.91

[2] Institute of Transportation Engineers. (2012). Trip Generation Manual 9th Edition

[3] Average adjustment used to count every trip only once, at the point of final destination.

Vehicle trips are estimated using average weekday vehicle trips ends from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 9<sup>th</sup> Edition 2012). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway).

Trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor of 50 percent is applied to the office/institutional, and industrial/flex categories. The commercial/retail category has a trip factor of less than 50 percent because this type of development attracts vehicles as they pass-by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, the ITE data indicates that 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the commercial site as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor of 66 percent is multiplied by 50 percent to calculate a trip adjustment factor for commercial land use of 33 percent.

#### PROJECTED SERVICE UNITS AND INFRASTRUCTURE DEMAND

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ARS 9-463.05(E)(3) requires:

*“A description of all or the parts of the necessary public services or facility expansions and their costs necessitated by and attributable to development in the service area based on the approved land use assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(5) requires:

*“The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.”*

ARS 9-463.05(E)(6) requires:

*“The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.”*

## Fire Facilities

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire facilities fee to pay down the debt incurred to expand the Fire facilities with the capacity to absorb growth. Over the course of the next five years, the City of Flagstaff is projected to add an additional 4,617 persons, and see an additional 4,818 nonresidential vehicle trips. As shown in Figure 20, projected development between 2013 and 2018 will generate demand for the remaining Fire facilities capacity.

**Figure 20: Projected Demand for Fire Facilities**

		Existing Fire Facilities = 59,197 SF					
		Residential		Nonresidential		Demand for	Remaining
		Population	2018 LOS	Vehicle Trips	2018 LOS	Facility SF	Capacity
Base Yr	2013	74,941	0.52	102,819	0.16	55,997	3,200
1	2014	76,931	0.52	103,771	0.16	57,191	2,006
2	2015	77,576	0.52	104,726	0.16	57,684	1,513
3	2016	78,228	0.52	105,688	0.16	58,183	1,014
4	2017	78,889	0.52	106,662	0.16	58,688	509
5	2018	79,558	0.52	107,637	0.16	59,197	0

## Fire Apparatus

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire apparatus fee to pay down the debt incurred to purchase the large apparatus. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 5,293 persons, and see an additional 5,817 nonresidential vehicle trips. As shown in Figure 21, projected development between 2013 and 2019 will generate demand for the remaining capacity of the Fire apparatus.

**Figure 21: Projected Demand for Fire Apparatus**

		Existing Fire Apparatus = 2 Units					
		Residential		Nonresidential		Demand for	Remaining
		Population	2019 LOS	Vehicle Trips	2019 LOS	Apparatus	Capacity
Base Yr	2013	74,941	0.00002	102,819	0.00001	1.88	0.12
1	2014	76,931	0.00002	103,771	0.00001	1.92	0.08
2	2015	77,576	0.00002	104,726	0.00001	1.93	0.07
3	2016	78,228	0.00002	105,688	0.00001	1.95	0.05
4	2017	78,889	0.00002	106,662	0.00001	1.97	0.03
5	2018	79,558	0.00002	107,637	0.00001	1.98	0.02
6	2019	80,234	0.00002	108,636	0.00001	2.00	0.00

## Fire Equipment

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire equipment fee to pay down the debt incurred to purchase the Fire equipment. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 8,084 persons, and see an additional 9,864 nonresidential vehicle trips. As shown in Figure 22, projected development between 2013 and 2023 will generate demand for the remaining capacity of the Fire equipment.

**Figure 22: Projected Demand for Fire Equipment**

		Existing Fire Equipment = 1 Unit					
		Residential		Nonresidential		Demand for Equipment	Remaining Capacity
		Population	2023 LOS	Vehicle Trips	2023 LOS		
Base Yr	2013	74,941	0.00001	102,819	0.000003	0.91	0.09
1	2014	76,931	0.00001	103,771	0.000003	0.92	0.08
2	2015	77,576	0.00001	104,726	0.000003	0.93	0.07
3	2016	78,228	0.00001	105,688	0.000003	0.94	0.06
4	2017	78,889	0.00001	106,662	0.000003	0.95	0.05
5	2018	79,558	0.00001	107,637	0.000003	0.96	0.04
6	2019	80,234	0.00001	108,636	0.000003	0.97	0.03
7	2020	80,918	0.00001	109,630	0.000003	0.97	0.03
8	2021	81,611	0.00001	110,630	0.000003	0.98	0.02
9	2022	82,314	0.00001	111,652	0.000003	0.99	0.01
10	2023	83,025	0.00001	112,683	0.000003	1.00	0.00

## Fire Communications Infrastructure

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire *communications infrastructure* fee to pay down the debt incurred to improve the network and add a telecommunications tower, to ensure the shared Public Safety Communications Command Center would have sufficient capacity to serve growth. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 6,670 persons, and see an additional 7,811 nonresidential vehicle trips. As shown in Figure 23, projected development between 2013 and 2021 will generate demand for the remaining portion of *communications infrastructure* that is attributable to the Flagstaff Fire Department.

**Figure 23: Projected Demand for Fire Communications Infrastructure**

		Existing Fire Communications Infrastructure = 18.41% of 1 System Unit					
		Residential		Nonresidential		Demand for      Remaining Units            Capacity	
		Service Units	2021 LOS per 1,000	Service Units	2021 LOS per 1,000		
		Population	Service Units	Vehicle Trips	Service Units		
Base Yr	2013	74,941	0.002	102,819	0.0005	0.17	0.014
1	2014	76,931	0.002	103,771	0.0005	0.17	0.011
2	2015	77,576	0.002	104,726	0.0005	0.17	0.009
3	2016	78,228	0.002	105,688	0.0005	0.18	0.008
4	2017	78,889	0.002	106,662	0.0005	0.18	0.006
5	2018	79,558	0.002	107,637	0.0005	0.18	0.005
6	2019	80,234	0.002	108,636	0.0005	0.18	0.003
7	2020	80,918	0.002	109,630	0.0005	0.18	0.002
8	2021	81,611	0.002	110,630	0.0005	0.18	0.000

## Fire Vehicles and Communications Equipment

As shown in Figure 24 TischlerBise projects an additional 8,084 persons and 9,864 trips over the next ten years. The City of Flagstaff Fire Department expects to expand the fleet of Fire vehicles incrementally to serve growth at the current level of service, which equates to a demand for four new vehicles in the next ten years. Incremental investments in Communications equipment will be made by the Fire Department to maintain the current level of service, which equates to a demand for one new unit in the next ten years. The incremental demand to serve growth is shown in Figure 24 below.

The ten-year totals of the projected demand for the Fire vehicles, and the Fire Department's share of the communications equipment is multiplied by the respective costs per average unit to determine the total cost to incrementally expand capacity for each category to accommodate the projected demand over the next ten years. For example, the projected development over the next ten years requires adding four vehicles. This is multiplied by the average cost of \$200,992 per average vehicle to calculate a total ten-year cost of \$803,968. This calculation is repeated for each category. See Figure 24 for additional details.

**Figure 24: Projected Demand for Fire Vehicles and Communications Equipment**

		Service Units		Vehicles	Comm. Equip.
				per 1,000 Service Units	
Res LOS		Persons		0.32	0.11
Nonres LOS		Nonresidential Vehicle Trips		0.10	0.04
		Average Cost per Unit		<b>\$200,992</b>	<b>\$5,547</b>

		Projected Service Units		Projected Demand (Rounded)	
		Persons	Nonres Trips	Vehicles (units)	Comm. Equip. (units)
Base	2013	74,941	102,819	34	12
1	2014	76,931	103,771	35	12
2	2015	77,576	104,726	35	13
3	2016	78,228	105,688	35	13
4	2017	78,889	106,662	36	13
5	2018	79,558	107,637	36	13
6	2019	80,234	108,636	36	13
7	2020	80,918	109,630	37	13
8	2021	81,611	110,630	37	13
9	2022	82,314	111,652	37	13
10	2023	83,025	112,683	38	13
<b>Ten-Year Total</b>		<b>8,084</b>	<b>9,864</b>	<b>4</b>	<b>1</b>
Cost of Fire Vehicles				\$803,968	
Cost of Fire Communications Equipment				\$5,547	

## Fire Facilities Improvements Plan

Lastly, the 10-year plan for necessary Fire Facilities improvements and expansions identified by City of Flagstaff are listed in Figure 25. The figure below reflects new purchases and does not include debt service costs associated with Fire facilities, apparatus, equipment, and communications infrastructure.

Figure 25: Necessary Fire Facilities Expansions

<b>Improvements</b>	<b>10-Year Plan</b>
Projects	
Incremental Expansion of Vehicles	\$803,968
Incremental Expansion of Communications Equipment	\$5,547
<b>TOTAL</b>	<b>\$809,515</b>

## MAXIMUM SUPPORTABLE FIRE FACILITIES DEVELOPMENT FEES

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The maximum supportable development fees by land use for Fire Facilities are shown in Figure 26 on the following page. **The maximum supportable fees differ from the proposed Fire Facilities development fees presented in the [Development Fee Report](#) due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.**

## Fire Facilities IIP and Development Fee Study

Included in the Fire Facilities *per service unit cost* is the cost to prepare the Fire Facilities IIP and Development Fee Study. See **Appendix A – Cost of Professional Services** for the detailed calculations.

## Revenue Credit

Included in the maximum supportable development fees is a *Revenue Credit* of 0 percent. The unadjusted Fire Facilities development fees per development unit would not generate more revenue over the next ten years, based on the approved [Land Use Assumptions](#), than the identified growth-related necessary expenditures of \$2,096,648 (necessary facilities expansion plus the IIP and Development Fee Study cost). To ensure that no more fee revenue is collected than the City plans to spend, the potential gross cost per service unit is reduced by the revenue credit to calculate the net capital cost per service unit. Based on the gross capital costs per service unit, the projected development fee revenue would equal \$1,513,051. See Figure 26 and Figure 27 for additional detail. Therefore, no revenue credit adjustment is necessary for the Fire Facilities development fees.

**Figure 26: Maximum Supportable Fire Facilities Development Fees<sup>3</sup>**

**Fire Level Of Service and Capital Costs**

	<u>Per Person</u>
Fire Facilities - Debt Service	\$109.18
Fire Vehicles	\$63.83
Fire Apparatus - Debt Service	\$2.29
Fire Equipment - Debt Service	\$1.32
Fire Communications Equipment	\$0.63
Fire Communications Infrastructure - Debt Service	\$5.65
IIP and Development Fee Study	\$1.93
<b>GROSS CAPITAL COST</b>	<b>\$184.83</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$184.83</b>

**Fire Residential Development Fee Schedule**

			Development Fee per Housing Unit		
Unit Type	Number of Bedrooms	Persons per Household [1]	Proposed Fee	Current Fee [2]	Increase (Decrease)
2+ Units	All Sizes	2.57	\$474	\$352	\$122
Single Unit	0-3	2.62	\$484	\$444	\$40
Single Unit	4+	3.29	\$607	\$444	\$163
Single Unit	Avg	2.75	\$508	\$444	\$64

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

**Fire Level Of Service and Capital Costs**

	<u>Per Trip</u>
Fire Facilities - Debt Service	\$38.95
Fire Vehicles	\$19.94
Fire Apparatus - Debt Service	\$0.89
Fire Equipment - Debt Service	\$0.46
Fire Communications Equipment	\$0.20
Fire Communications Infrastructure - Debt Service	\$2.07
IIP and Development Fee Study	\$0.79
<b>GROSS CAPITAL COST</b>	<b>\$63.30</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$63.30</b>

**Fire Nonresidential Development Fee Schedule**

			Development Fee per Square Foot of Floor Area		
Nonresidential Land Use	Weekday Vehicle Trip Ends	Trip Rate Adj. Factors	Proposed Fee	Current Fee [3]	Increase (Decrease)
	(Per 1,000 sq. ft.)		(Per Square Foot of Floor Area)		
Commercial	42.70	33%	\$0.89	\$0.81	\$0.08
Office/Institutional	11.03	50%	\$0.34	\$0.28	\$0.06
Industrial/Flex	3.82	50%	\$0.12	\$0.07	\$0.05

[3] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

The 2012 nonresidential fees were by size thresholds, averages are shown here.

<sup>3</sup> The maximum supportable fees differ from the proposed Fire Facilities development fees presented in the Development Fee Report due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

## FORECAST OF REVENUES FOR FIRE FACILITIES

**Appendix B – Forecast of Revenues Other Than Development Fees** contains the forecast of revenues required by Arizona’s enabling legislation.

### Fire Facilities Cash Flow

Revenue projections shown below assume implementation of the maximum supportable Fire Facilities development fees and that development over the next ten years is consistent with the approved [Land Use Assumptions](#) described in Appendix C. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the development fee revenue. The deficit shown in the revenue projection below represents the portion of necessary investments that will not be recouped through Fire Facilities development fee revenue.

**Figure 27: Projected Revenue for Fire Facilities**

#### *Ten-Year Growth-Related Costs for Fire Facilities*

Fire Facilities - Debt Service*	\$ 1,187,929
Fire Vehicles	\$ 803,968
Fire Apparatus - Debt Service*	\$ 17,347
Fire Equipment - Debt Service*	\$ 15,247
Fire Communications Equipment	\$ 5,547
Fire Communications Infrastructure - Debt Service*	\$ 53,881
IIP and Development Fee Study	\$ 12,729
<b>TOTAL</b>	<b>\$ 2,096,648</b>

[1] Debt Service costs shown above represent only the growth share of each debt obligation.

		<i>per Housing Unit</i>		<i>Per Square Foot of Floor Area</i>		
		<i>Single Unit</i>	<i>2+ Units</i>	<i>Commercial</i>	<i>Office</i>	<i>Industrial</i>
		<b>\$508</b>	<b>\$474</b>	<b>\$0.89</b>	<b>\$0.34</b>	<b>\$0.12</b>
	<i>Year</i>	<i>Housing Units Added</i>		<i>Square Feet Added (1,000)</i>		
Base	2013	16,833	10,324	4,195	6,084	5,316
Year 1	2014	16,942	10,391	4,234	6,139	5,370
Year 2	2015	17,052	10,458	4,273	6,193	5,424
Year 3	2016	17,162	10,526	4,313	6,248	5,478
Year 4	2017	17,273	10,594	4,353	6,303	5,532
Year 5	2018	17,385	10,662	4,393	6,359	5,588
Year 6	2019	17,497	10,731	4,434	6,416	5,643
Year 7	2020	17,610	10,800	4,474	6,473	5,700
Year 8	2021	17,724	10,870	4,515	6,530	5,757
Year 9	2022	17,839	10,940	4,557	6,588	5,815
Year 10	2023	17,954	11,011	4,599	6,648	5,873
<i>Ten-Yr Increase</i>		1,121	687	404	564	557
Projected Fees =>		\$569,468	\$325,638	\$359,560	\$191,598	\$66,787
<b>Total Projected Revenues</b>		<b>\$1,513,051</b>				
Cumulative Net Surplus/(Deficit)		<b>(\$583,597)</b>				

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## POLICE FACILITIES INFRASTRUCTURE IMPROVEMENTS PLAN

### OVERVIEW

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ARS 9-463.05 (T)(7)(f) defines the facilities and assets, which can be included in the Police Facilities IIP:

*“Fire and police facilities, including all appurtenances, equipment and vehicles. Fire and police facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training police and firefighters from more than one station or substation.”*

The Police Facilities IIP includes components for the Police facilities, vehicles, the Police Department’s proportionate share of the City of Flagstaff public safety communications command center system (equipment and infrastructure), and the cost of preparing the Police Facilities IIP and Development Fee Study. Cost recovery is used to calculate the IIP for Police communications infrastructure. Incremental expansion is used to calculate the Police facilities, vehicles, and communications equipment elements of the Police Facilities IIP and Development Fees.

### SERVICE AREA

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The City of Flagstaff Police Department provides service to the entire city. The service area for the Police Facilities IIP and development fees is Citywide.

### PROPORTIONATE SHARE

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ARS 9-463.05 (B)(3) states that the development fee shall not exceed a proportionate share of the cost of necessary public services needed to accommodate new development. The Police IIP uses a functional population concept to allocate the demand between residential and nonresidential development. The demand for Police facilities and assets in the City of Flagstaff is measured by annual calls for service. Calls for service data from 2012, in combination with functional population factors (described below), were used to determine the relative demand for service from residential and nonresidential development.

## Functional Population

TischlerBise recommends functional population to allocate the cost of Police Facilities to residential and nonresidential development. Functional population has a long history in the professional literature. Originally called activity analysis by Stuart Chapin in 1965, and incorporated into development impact fee methodology by James Nicholas in the mid-1980s, functional population has been used to equitably spread infrastructure costs between residential and nonresidential sectors. TischlerBise has refined the functional population concept by incorporating what the U.S. Census Bureau calls “daytime population.” Using jurisdiction-specific data on commuting patterns, it is now possible to account for where people live and work (i.e., spend their daily hours). As shown below, residents that do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Flagstaff are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Flagstaff are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2010 decennial census and Longitudinal Employer-Household Dynamics data, both provided by the U.S. Census Bureau, the cost allocation for residential development is 70 percent, while nonresidential development accounts for 30 percent of the demand for Police Facilities.

Figure 28: City of Flagstaff Functional Population

	<u>Demand Units in 2010</u>		<u>Demand Hours/Day</u>	<u>Person Hours</u>
<b>Residential</b>				
Population	65,870			
Residents Not Working	36,843		20	736,860
Resident Workers	29,027			
Worked in City	17,161		14	240,254
Worked Outside City	11,866		14	166,124
	Residential Subtotal			1,143,238 <b>70%</b>
<b>Nonresidential</b>				
Non-working Residents	36,843		4	147,372
Jobs Located in City	34,744			
Residents Working in City	17,161		10	171,610
Non-Resident Workers (inflow commuters)	17,583		10	175,830
	Nonresidential Subtotal			494,812 <b>30%</b>
	TOTAL			1,638,050

Source: U.S. Census Bureau, 2010 Decennial Census; U.S. Census Bureau, OnTheMap 6.1.1 Application and LEHD Origin-Destination Employment Statistics

## Service Units

Different demand indicators for residential and nonresidential development are used to calculate the Police Facilities IIP. Residential development fees are calculated based on resident population, and then converted to an appropriate amount by type of housing unit based on persons per household.

For nonresidential development fees, TischlerBise recommends using nonresidential vehicle trips as the demand indicator for Police Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories. This ranking of trip rates is consistent with the relative demand for Police services from nonresidential development.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Police development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator Police development fees would be too high for industrial development. More information regarding the calculation of nonresidential vehicle trips can be found in Figure 36: Police Facilities Ratio of Service Unit to Land Use.

## Police Department Calls for Service

The functional population allocation to residential and nonresidential development is applied to the 2012 calls for service data provided by the City of Flagstaff Police Department to derive calls for service per service unit (i.e. population for residential development, and vehicle trips for nonresidential development). Of the Police Department's 43,304 calls for service, 70 percent or 30,313 represent demand from residential development, and 30 percent or 12,991 represent demand from nonresidential development.

**Figure 29: Police Proportionate Share**

	<b>2012</b>
<b>Total Calls for Service</b>	<b>43,304</b>

Source: City of Flagstaff, Police Department

Land Use	Proportionate Share	Estimated Calls for Service (CFS)	2013 Service Units	CFS per Service Unit
Residential	70%	30,313	74,941 Population	0.40
Nonresidential	30%	12,991	102,819 Nonres Vehicle Trips	0.13

## Public Safety Communications Command Center Calls for Service

City of Flagstaff shares a public safety command center and associated infrastructure with Coconino County and surrounding public safety agencies. The shared command center received 71,475 calls for service from all jurisdictions in calendar year 2012. Calls for service for the City of Flagstaff Police Department accounted for 61 percent of the total public safety calls for service received. This proportionate share factor will be used to calculate the demands placed on the *communications equipment* (e.g., portable communication radios, and stationary computer components) by the Police Department.

Proportionate share factors for demands placed on the *communications infrastructure* (e.g., telecommunications towers for wireless network) by the Police Department were provided by the City of Flagstaff Police Department based on use by the City's Fire, Police, and Public Works departments, and other jurisdictions. Proportionate share factors for *communications infrastructure* differ from *communications equipment* due to additional impact from Public Works. Proportionate share factors are shown below.

**Figure 30: Public Safety Communications Command Center Proportionate Share<sup>4</sup>**

Public Safety Agency	Calls for Service [1]	Proportionate Share for Communications	
		Equipment [1]	Infrastructure [2]
Flagstaff Police	43,304	61%	27%
Flagstaff Fire	10,178	14%	18%
Other Jurisdictions	17,993	25%	26%
Flagstaff Public Works	Not Applicable	0%	29%
<b>Total Calls Received in 2012</b>	71,475	100%	100%

[1] Proportionate share factors for Communications Equipment are based on total calls for service dispatched by the Public Safety Communications Command Center.

[2] Proportionate share factors (shown here as rounded figures) for Communications Infrastructure were provided by the City of Flagstaff Police Department. The City of Flagstaff Department of Public Works places demands on the communications infrastructure but not on the Public Safety Communications Command Center.

<sup>4</sup> The proportionate share factors by department for the *Communications Infrastructure* are shown as rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

## IIP FOR POLICE FACILITIES

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For each necessary public service that is the subject of a development fee, ARS 9-463.05(E) requires that the IIP include seven elements. The sections below detail each of these elements. (A forecast of new revenues generated by sources other than development fees can be found in **Appendix B – Forecast of Revenues Other Than Development Fees.**)

### Analysis of Capacity, Usage, and Costs of Existing Public Services

ARS 9-463.05(E)(1) requires:

*“A description of the existing necessary public services in the service area and the costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(2) requires:

*“An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

## Police Facilities

### *Level of Service and Cost per Service unit*

The City plans to maintain the level of service (LOS) for Police facilities that it provides to existing development. Thus, the incremental expansion methodology is used to calculate this component of the Police IIP. The City currently has 46,672 square feet of qualified Police facilities. Based on the proportionate share analysis discussed above, residential development creates 70 percent of the demand for Police facilities, with nonresidential development accounting for 30 percent of the demand. The current LOS for residential development is calculated as follows: (46,672 square feet X 70% residential proportionate share)/74,941 persons = 0.44 square feet per capita. This calculation is repeated for nonresidential development resulting in a LOS of 0.14 square feet per nonresidential vehicle trip.

The cost per service unit is the product of square feet per service unit and the average cost per square foot. The cost per service unit for residential development is calculated as follows: 0.44 square feet per capita X \$239 average cost per square foot = \$104.19 cost per person.<sup>5</sup> This calculation is repeated for nonresidential development resulting in a cost of \$32.55 per nonresidential vehicle trip.

**Figure 31: Incremental Expansion – Police Facilities**

Facility	Total Square Feet	Cost per Square Foot	Replacement Cost [2]
LEAF Facility (City Police share) [1]	32,148	\$252	\$8,104,898
Police Share of Coconino Facility	8,000	\$252	\$2,016,896
Southside Substation	64	\$252	\$16,135
Sunnyside Substation	400	\$252	\$100,845
Garage/Warehouse (Win Oil leased)	3,500	\$252	\$882,392
Purchased "Pod" Storage Space	2,560	\$5	\$12,000
<b>TOTAL</b>	<b>46,672</b>	<b>\$239</b>	<b>11,133,166</b>

Source: City of Flagstaff, Police Department

[1] Reflects non-administrative space

[2] 2007 values adjusted for inflation to Feb 2013 CPI

Land Use	Proportionate Share	2013 Service Units	Square Feet per Service Unit	Cost per Service Unit
Residential	70%	74,941 Population	0.44	<b>\$104.19</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.14	<b>\$32.55</b>

<sup>5</sup> Level of service is shown as a rounded figure. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

## Police Vehicles

The City plans to maintain the LOS for Police vehicles that it provides to existing development. Thus, the incremental expansion methodology is used to calculate this component of the Police Facilities IIP. The City currently has a fleet of 78 Police vehicles. Based on the proportionate share analysis, residential development creates 70 percent of the demand for police vehicles, with nonresidential development accounting for 30 percent of the demand. The current LOS for residential development is calculated as follows:  $(78 \text{ vehicles} \times 70\% \text{ proportionate share}) / (74,941 \text{ persons} / 1,000) = 0.73 \text{ vehicles per } 1,000 \text{ persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.23 vehicles per 1,000 nonresidential vehicle trips.

The cost per service unit is the product of LOS and the average cost per unit. The cost per service unit for residential development is calculated as follows:  $(0.73 \text{ LOS} / 1,000) \times \$34,300 \text{ average cost per unit} = \$24.99 \text{ cost per service unit}$ .<sup>6</sup> This calculation is repeated for nonresidential development resulting in a cost of \$7.81 per nonresidential vehicle trip.

**Figure 32: Incremental Expansion – Police Vehicles**

Type of Vehicle	Units in Service	Unit Price [1]	Replacement Cost
Patrol Sedan	32	\$38,054	\$1,217,741
Patrol Motorcycle	4	\$16,157	\$64,629
Patrol Motorcycle Trainer	3	\$11,480	\$34,440
Patrol Utility Vehicle	2	\$38,905	\$77,810
Patrol 4x4 Pickup Truck	1	\$28,594	\$28,594
Prisoner Transport Van	1	\$44,220	\$44,220
Patrol Surveillance Van	1	\$162,210	\$162,210
Bomb Squad Response Vehicle	1	\$176,028	\$176,028
Bomb Squad Trailer	1	\$85,038	\$85,038
Mobile Command Post	1	\$60,377	\$60,377
Radar/Sign Board Trailer	3	\$25,511	\$76,534
Full Service Sedan [2]	23	\$21,259	\$488,967
Graffiti Eradication Van	1	\$31,995	\$31,995
Street Crimes Task Force Vehicle	2	\$36,779	\$73,558
Utility Trailer	1	\$3,720	\$3,720
Animal Control 4x4 Pickup Truck	1	\$51,916	\$51,916
<b>TOTAL</b>	<b>78</b>	<b>\$34,300</b>	<b>\$2,677,776</b>

Source: City of Flagstaff, Police Department

[1] Includes all pieces of equipment to place the vehicle in service; Adjusted for Inflation Feb 2013 CPI

[2] Reflects updated inventory to remove vehicles used for administrative services

Land Use	Proportionate Share	2013 Service Units	Vehicles per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.73	<b>\$24.99</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.23	<b>\$7.81</b>

<sup>6</sup> Level of service is shown as a rounded figure. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

## Police Communications System - Equipment and Infrastructure

The City of Flagstaff maintains an inventory of communications equipment and infrastructure associated with the Public Safety Communications Command Center. The shared center dispatches calls for the City of Flagstaff, Coconino County and surrounding public safety agencies, as well as providing communications infrastructure for the City of Flagstaff Department of Public Works. Each agency places differing levels of demand on the system. As discussed above, annual calls for service were used to calculate the share of the components allocated to the City of Flagstaff Police Department; and functional population factors were used to calculate the demands placed on the system by residential and nonresidential land uses in the service area.

### **Level of Service**

There are two types of communications equipment associated with the shared system; first is the portable equipment assigned to staff and vehicles, and second is the computer equipment necessary to dispatch and track calls for service. Communications infrastructure includes the telecommunications towers for the wireless network.

Of the communication equipment and infrastructure that constitute the City of Flagstaff shared system, the City of Flagstaff Police Department makes use of 72 components. Portable components used by the Police Department are allocated to the Police Department at 100 percent. Dispatch communications components like the computer system's server are allocated based on demand on the system generated by the Police Department, and determined by calls for service (see the **Public Safety Communications Command Center Calls for Service** section above).

Demand placed on the *communications infrastructure* by the Police Department was determined by the City of Flagstaff. According to the City, the Police Department generates 26.53 percent of the total demand for the *communications infrastructure*. The remaining demand on the *communications infrastructure* is generated by the Flagstaff Fire and Public Works Departments as well as from other jurisdictions.

As shown in Figure 33, these proportionate share factors are used to adjust the count of components to reflect only the share of the total 72 components used by the Police Department. The Police Department uses 100 percent of the 27 *portable communications* components, 61 percent (26.84 units) of the 44 *dispatch communications* components, and 26.53 percent of the *communications infrastructure*. These shares equate to 54.11 units of communications equipment and infrastructure used by the Police Department.

The communications equipment and infrastructure LOS for residential development is calculated as follows:  $(54.11 \text{ pieces of equipment} \times 70\% \text{ proportionate share}) / (74,941 / 1,000) = 0.51 \text{ pieces of equipment per 1,000 persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.16 pieces of equipment per 1,000 nonresidential vehicle trips.

**Figure 33: Level of Service Police Communications System - Equipment and Infrastructure**

Communications Equipment and Infrastructure	Units in Service	Police Dept. Share of Units [1]	Units Used by Police Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	27	100.00%	27.00	\$3,900	\$105,300
Equipment - Dispatch Communications	44	61.00%	26.84	\$5,366	\$144,026
Infrastructure - Tower and Network [3]	1	26.53%	0.27	\$3,952,287	\$1,048,542
<b>TOTAL</b>	<b>72</b>		<b>54.11</b>	<b>\$59,635</b>	<b>\$1,297,868</b>

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Police Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). *Communications Infrastructure proportionate share*

Land Use	Proportionate Share	2013 Service Units	Equipment & Infrastructure per 1,000 Service Units
Residential	70%	74,941 Population	0.51
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.16

### **Cost per Service unit**

The costs per service unit for the Police *communications equipment* and *communications infrastructure* are calculated separately.

- **Communications Infrastructure:** The City of Flagstaff debt financed the expansion of the public safety *communications infrastructure* in 2011. As new development utilizes its proportionate share of the available capacity of the expanded system the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit for Police *communications infrastructure* (shown in Figure 35).
- **Communications Equipment:** The cost per service unit for Police *communications equipment* is calculated using an incremental expansion methodology.

### **Communications Equipment**

To calculate the cost per service unit for Police *communications equipment*, first the replacement costs are calculated for each component by multiplying the per unit cost by the share of units allocated to the Police Department. Next, the replacement value for just the *communications equipment* was calculated resulting in a value of \$249,326 for the Police *communications equipment* alone. (*Communications infrastructure* is calculated and shown separately). The current cost of Police *communications equipment* per service unit for residential development is calculated as follows: (\$249,326 X 70% proportionate share)/74,941 persons = \$2.33 per capita. This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.73.

**Figure 34: Incremental Expansion –Communications Equipment**

Communications Equipment and Infrastructure	Units in Service	Police Dept. Share of Units [1]	Units Used by Police Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	27	100.00%	27.00	\$3,900	\$105,300
Equipment - Dispatch Communications	44	61.00%	26.84	\$5,366	\$144,026
Infrastructure - Tower and Network [3]	1	26.53%	0.27	\$3,952,287	\$1,048,542
<b>TOTAL</b>	<b>72</b>		<b>54.11</b>	<b>\$59,635</b>	<b>\$1,297,868</b>
<b>Total for Communications Equipment</b>	<b>71</b>		<b>53.84</b>	<b>\$4,631</b>	<b>\$249,326</b>

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Police Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). *Communications Infrastructure proportionate share*

Land Use	Proportionate Share	2013 Service Units	Equipment per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.50	<b>\$2.33</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.16	<b>\$0.73</b>

### *Communications Infrastructure*

The City of Flagstaff issued debt in 2011 to pay for *communications infrastructure* improvements. As new development utilizes its proportionate share of the available capacity of the *communications infrastructure*, the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used, and the growth share is based on projected persons and nonresidential vehicle trips at the end of the bond term.

The City's Police, Fire, and Public Works Departments use the *communications infrastructure*, along with surrounding public safety agencies. According to the City of Flagstaff, the Police Department generates 26.53 percent of total demand on the infrastructure.

The City of Flagstaff has a fiscal year that runs July 1<sup>st</sup> through June 30<sup>th</sup>. The final payments for debt obligation are due July 1<sup>st</sup>, or the start of the fiscal year. Therefore, the service units at the time of the last payment, July 1, 2021, are used to calculate the growth share by land use. TischlerBise projects the City of Flagstaff will add 6,670 persons and see an additional 7,811 nonresidential vehicle trips between July of 2013 and 2021, which equates to 8 percent of the 2021 projected combined population and nonresidential trips. The formula to calculate growth share is as follows:  $192,241 \text{ population and nonresidential vehicle trips in 2021} - 177,760 \text{ population and nonresidential vehicle trips in 2013} / 192,241 \text{ population and nonresidential vehicle trips in 2021} = 8 \text{ percent (rounded)}$ .

The cost per service unit for residential development is calculated as follows:  $(\$3,658,398 \text{ remaining principal and interest} \times 26.53\% \text{ Police proportionate share} \times 8\% \text{ growth share} \times 70\% \text{ residential proportionate share}) / 6,670 \text{ net increase in persons} = \$8.15 \text{ cost per capita}$ . This calculation is repeated nonresidential and results in a cost per nonresidential vehicle trip of \$2.98.

**Figure 35: Cost Recovery – Police Communications Infrastructure**

Debt Obligation		Year of Final	Remaining Principal
Year Issued	Name	Payment	and Interest
2011	Communications Equipment	2021	\$3,658,398

*Source: City of Flagstaff, Finance Department*

Land Use	Portion Attributable to Police Dept. [1]	Growth Share [2]	Proportionate Share [3]	Increase 2013-2021 Service Units [4]	Cost per Service Unit
Residential	26.53%	8%	70%	6,670 Population	<b>\$8.15</b>
Nonresidential			30%	7,811 Nonres Vehicle Trips	<b>\$2.98</b>

*Source: City of Flagstaff, Finance Department*

[1] City of Flagstaff Public Safety Communications Command Center

[2] Share of projected population and nonresidential vehicle trips attributable to new growth

[3] TischlerBise. (2013). Functional Population

[4] TischlerBise. (2013). Development Fee Land Use Assumptions

### **Excluded Costs**

Development fees in Flagstaff exclude costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City of Flagstaff Capital Improvement Plan addresses the cost of these excluded items.

### **Current Use and Available Capacity**

According to City staff, Police communications infrastructure has surplus capacity to serve growth; therefore, a cost recovery methodology was used to calculate the growth share of future principal and interest payments. Police facilities, vehicles, and communications equipment are fully utilized; therefore, there is no available capacity for future development.

## RATIO OF SERVICE UNIT TO DEVELOPMENT UNIT

ARS 9-463.05(E)(4) requires:

*“A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.”*

Figure 36 displays the ratio of a service unit (i.e., persons and nonresidential vehicle trips) to various types of land uses for residential and nonresidential development. The residential development table displays the *Persons per Household* factors for single family and multifamily homes.

For nonresidential development, average daily vehicle trips are used for the Police Facilities IIP as a measure of demand by land use. TischlerBise recommends using nonresidential vehicle trips as the best demand indicator for Police Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Police Facilities development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator Police Facilities development fees would be too high for industrial development.

**Figure 36: Police Facilities Ratio of Service Unit to Land Use**

Residential Development	
Land Use	Persons per Household [1]
Single Unit	2.75
2+ Unit	2.57

[1] TischlerBise. (2013).  
Development Fee Land Use Assumptions

Nonresidential Development			
Land Use	Weekday Trip	Trip	
	Ends [2] (a)	Adjustment [3] (b)	Vehicle Trips (a X b)
Commercial KSF	42.70	33%	14.09
Office/Institutional KSF	11.03	50%	5.52
Industrial/Flex KSF	3.82	50%	1.91

[2] Institute of Transportation Engineers. (2012). Trip Generation Manual 9th Edition

[3] Average adjustment used to count every trip only once, at the point of final destination.

Vehicle trips are estimated using average weekday vehicle trips ends from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 9<sup>th</sup> Edition 2012). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway).

Trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor of 50 percent is applied to the office/institutional, and industrial/flex categories. The commercial/retail category has a trip factor of less than 50 percent because this type of development attracts vehicles as they pass-by on arterial and collector roads. For an average size shopping center, the ITE (2012) indicates that on average 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the shopping center as their primary destination, of which half (33%) are trip ends.

### PROJECTED SERVICE UNITS AND INFRASTRUCTURE DEMAND

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ARS 9-463.05(E)(3) requires:

*“A description of all or the parts of the necessary public services or facility expansions and their costs necessitated by and attributable to development in the service area based on the approved land use assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(5) requires:

*“The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.”*

ARS 9-463.05(E)(6) requires:

*“The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.”*

## Police Communications Infrastructure

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Police Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Police *communications infrastructure* fee to pay down the debt incurred to improve the network and add a telecommunications tower, to ensure the shared Public Safety Communications Command Center would have sufficient capacity to serve growth. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 6,670 persons, and see an additional 7,811 nonresidential vehicle trips. As shown in Figure 37, projected development between 2013 and 2021 will generate demand for the remaining portion of *communications infrastructure* that is attributable to the Flagstaff Police Department.

**Figure 37: Projected Demand for Police Communications Infrastructure**

Existing Police Communications Infrastructure = 26.53% of 1 System Unit							
		Residential		Nonresidential		Demand for Units	Remaining Capacity
		Service Units	2021 LOS per 1,000	Service Units	2021 LOS per 1,000		
Base Yr		Population	Service Units	Vehicle Trips	Service Units		
2013		74,941	0.002	102,819	0.001	0.24	0.021
1	2014	76,931	0.002	103,771	0.001	0.25	0.016
2	2015	77,576	0.002	104,726	0.001	0.25	0.013
3	2016	78,228	0.002	105,688	0.001	0.25	0.011
4	2017	78,889	0.002	106,662	0.001	0.26	0.009
5	2018	79,558	0.002	107,637	0.001	0.26	0.007
6	2019	80,234	0.002	108,636	0.001	0.26	0.005
7	2020	80,918	0.002	109,630	0.001	0.26	0.002
8	2021	81,611	0.002	110,630	0.001	0.27	0.000

## Police Facilities, Vehicles, and Communications Equipment

TischlerBise projects an additional 8,084 persons and 9,864 trips over the next ten years. This new development will demand approximately 4,867 additional square feet of Police facilities. The City of Flagstaff Police Department will need to expand its fleet of Police vehicles incrementally by eight units to maintain the current level of service, and add five units of *communications equipment*.

The ten-year totals of the projected demand for each existing Police category is multiplied by the respective costs per unit to determine the total cost of each category to accommodate the projected demand over the next ten years. For example, the projected development over the next ten years requires eight additional Police vehicles. This is multiplied by the average cost of \$34,300 per vehicle to calculate the total ten-year cost for Police vehicles to be \$274,400. This calculation was repeated for each Police Component. See Figure 38 for additional details.

**Figure 38: Projected Demand for Police Facilities, Vehicles, and Communications Equipment**

	Service Units	Facilities	Vehicles	Comm. Equip.
		per Service Unit	per 1,000 Service Units	
Res LOS	Persons	0.44	0.73	0.50
Nonres LOS	Nonresidential Vehicle Trips	0.14	0.23	0.16
	Average Cost per Unit	\$239	\$34,300	\$4,631

				Projected Demand (Rounded)		
		Projected Service Units		Facilities	Vehicles	Comm. Equip.
		Persons	Nonres Trips	(sq. ft.)	(units)	(units)
Base	2013	74,941	102,819	46,672	78	54
1	2014	76,931	103,771	47,669	80	55
2	2015	77,576	104,726	48,080	80	55
3	2016	78,228	105,688	48,496	81	56
4	2017	78,889	106,662	48,916	82	56
5	2018	79,558	107,637	49,341	82	57
6	2019	80,234	108,636	49,772	83	57
7	2020	80,918	109,630	50,205	84	58
8	2021	81,611	110,630	50,643	85	58
9	2022	82,314	111,652	51,089	85	59
10	2023	83,025	112,683	51,539	86	59
<b>Ten-Year Total</b>		<b>8,084</b>	<b>9,864</b>	<b>4,867</b>	<b>8</b>	<b>5</b>
Cost of Police Facilities				\$1,163,213		
Cost of Police Vehicles				\$274,400		
Cost of Police Communications Equipment				\$23,155		

## Police Facilities Improvements Plan

Lastly, the 10-year plan for necessary Police Facilities improvements and expansions identified by the City of Flagstaff are listed in the figure below. The figure below reflects new purchases and does not include debt service costs associated with Police communications infrastructure.

Figure 39: Necessary Police Facilities Expansions

<b>Improvements</b>		<b>10-Year Plan</b>
Projects		
	Facilities	
	Emergency Operations Center	\$140,910
	Incremental Expansion of Police Facilities	\$1,022,303
	Incremental Expansion of Vehicles	\$274,400
	Incremental Expansion of Communications Equipment	\$23,155
	<b>TOTAL</b>	<b>\$1,460,768</b>

## MAXIMUM SUPPORTABLE POLICE FACILITIES DEVELOPMENT FEES

The maximum supportable development fees by land use for Police Facilities are shown in Figure 40 on the following page. **The maximum supportable fees differ from the proposed Police Facilities development fees presented in the Development Fee Report due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.**

## Police Facilities IIP and Development Fee Study

Included in the Police Facilities *per service unit cost* is the cost to prepare the Police Facilities IIP and Development Fee Study. See **Appendix A – Cost of Professional Services** for the detailed calculations.

## Revenue Credit

Included in the maximum supportable development fees is a *Revenue Credit* of 0 percent. The unadjusted Police Facilities development fees per development unit would not generate more revenue over the next ten years, based on the approved Land Use Assumptions, than the identified growth-related necessary expenditures of \$1,550,395 (existing debt service, necessary expansions, plus the IIP and Development Fee Study cost). To ensure that no more fee revenue is collected than the City plans to spend, the potential gross cost per service unit is reduced by the revenue credit to calculate the net capital cost per service unit. Based on the gross capital costs per service unit, the projected development fee revenue would equal \$1,125,690. See Figure 40 and Figure 41 for additional detail. Therefore, no revenue credit adjustment is necessary for the Police Facilities development fees.

**Figure 40: Maximum Supportable Police Facilities Development Fees<sup>7</sup>**

<b>Police Level Of Service and Capital Costs</b>	<b>Per Person</b>
Police Facilities	\$104.19
Police Vehicles	\$24.99
Police Communications Equipment	\$2.33
Police Communications Infrastructure - Debt Services	\$8.15
IIP and Development Fee Study	\$1.82
<b>GROSS CAPITAL COST</b>	<b>\$141.48</b>

<b>Revenue Credit</b>	<b>0%</b>	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$141.48</b>

<b>Police Residential Development Fee Schedule</b>			<b>Development Fee per Housing Unit</b>		
<b>Unit Type</b>	<b>Number of Bedrooms</b>	<b>Persons per Household [1]</b>	<b>Proposed Fee</b>	<b>Current Fee [2]</b>	<b>Increase (Decrease)</b>
2+ Units	All Sizes	2.57	\$362	\$184	\$178
Single Unit	0-3	2.62	\$370	\$231	\$139
Single Unit	4+	3.29	\$464	\$231	\$233
Single Unit	Avg	2.75	\$388	\$231	\$157

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

<b>Police Level Of Service and Capital Costs</b>	<b>Per Trip</b>
Police Facilities	\$32.55
Police Vehicles	\$7.81
Police Communications Equipment	\$0.73
Police Communications Infrastructure - Debt Services	\$2.98
IIP and Development Fee Study	\$0.75
<b>GROSS CAPITAL COST</b>	<b>\$44.82</b>

<b>Revenue Credit</b>	<b>0%</b>	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$44.82</b>

<b>Police Nonresidential Development Fee Schedule</b>			<b>Development Fee per Square Foot of Floor Area</b>		
<b>Nonresidential Land Use</b>	<b>Weekday Vehicle Trip Ends</b>	<b>Trip Rate Adj. Factors</b>	<b>Proposed Fee</b>	<b>Current Fee [3]</b>	<b>Increase (Decrease)</b>
	<b>(Per 1,000 sq. ft.)</b>		<b>(Per Square Foot of Floor Area)</b>		
Commercial	42.70	33%	\$0.63	\$0.68	(\$0.05)
Office/Institutional	11.03	50%	\$0.25	\$0.24	\$0.01
Industrial/Flex	3.82	50%	\$0.09	\$0.06	\$0.03

[3] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

The 2012 nonresidential fees were by size thresholds, averages are shown here.

<sup>7</sup> The maximum supportable fees differ from the proposed Police Facilities development fees presented in the Development Fee Report due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

## FORECAST OF REVENUES FOR POLICE FACILITIES

**Appendix B – Forecast of Revenues Other Than Development Fees** contains the forecast of revenues required by Arizona’s enabling legislation.

### Police Facilities Cash Flow

Revenue projections shown below assume implementation of the maximum supportable Police Facilities development fees and that development over the next ten years is consistent with the [Land Use Assumptions](#) described in Appendix C. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the development fee revenue. The deficit shown in the revenue projection below represents the portion of necessary investments that will not be recouped through Police Facilities development fee revenue.

**Figure 41: Projected Revenue for Police Facilities**

#### Ten-Year Growth-Related Costs for Police Facilities

Police Facilities	\$1,163,213
Police Vehicles	\$274,400
Police Communications Equipment	\$23,155
Police Communications Infrastructure - Debt Service*	\$77,646
IIP and Development Fee Study	\$11,981
<b>TOTAL</b>	<b>\$1,550,395</b>

[1] Debt Service cost shown above represents only the growth share of the debt obligation.

		Per Housing Unit		Per Square Foot of Floor Area		
		Single Unit	2+ Units	Commercial	Office	Industrial
		\$388	\$362	\$0.63	\$0.25	\$0.09
		Housing Units Added		Square Feet Added (1,000)		
Base	2013	16,833	10,324	4,195	6,084	5,316
Year 1	2014	16,942	10,391	4,234	6,139	5,370
Year 2	2015	17,052	10,458	4,273	6,193	5,424
Year 3	2016	17,162	10,526	4,313	6,248	5,478
Year 4	2017	17,273	10,594	4,353	6,303	5,532
Year 5	2018	17,385	10,662	4,393	6,359	5,588
Year 6	2019	17,497	10,731	4,434	6,416	5,643
Year 7	2020	17,610	10,800	4,474	6,473	5,700
Year 8	2021	17,724	10,870	4,515	6,530	5,757
Year 9	2022	17,839	10,940	4,557	6,588	5,815
Year 10	2023	17,954	11,011	4,599	6,648	5,873
Ten-Yr Increase		1,121	687	404	564	557
Projected Fees =>		\$434,948	\$248,694	\$255,127	\$139,281	\$47,640
<b>Total Projected Revenues</b>		<b>\$1,125,690</b>				
Cumulative Net Surplus/(Deficit)		<b>(\$424,705)</b>				

## APPENDIX A – COST OF PROFESSIONAL SERVICES

The table below displays each section of the Public Safety IIP and Development Fee Study. Each necessary public service is assigned a cost, followed by the proportionate share factors used to allocate the cost to residential and nonresidential land uses. Next, the figure displays the change in service units between 2013 and 2018, and finally the cost per service unit. (Because development fees are updated at least every five years, the cost is assessed against the service units for only 5 years.)

**Figure A42: IIP and Development Fee Study**

**Fire Development Fee Report**

Land Use		Residential	Nonresidential
Proportionate Share		70%	30%
Fire Consultant Fee	\$12,729	\$8,910	\$3,819

Service Unit		Person	Vehicle Trip
Increase in Service Units	2013-2018	4,617	4,818
Cost per Service Unit		\$1.93	\$0.79

**Police Development Fee Report**

Land Use		Residential	Nonresidential
Proportionate Share		70%	30%
Police Consultant Fee	\$11,981	\$8,387	\$3,594

Service Unit		Person	Vehicle Trip
Increase in Service Units	2013-2018	4,617	4,818
Cost per Service Unit		\$1.82	\$0.75

Source: TischlerBise. (2012). Development Fee Land Use Assumptions

## APPENDIX B – FORECAST OF REVENUES OTHER THAN DEVELOPMENT FEES

ARS 9-463.05(E)(7) requires:

*“A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved land use assumptions, and a plan to include these contributions in determining the extent of the burden imposed by the development as required in subsection B, paragraph 12 of this section.”*

ARS 9-463.05(B)(12) states,

*“The municipality shall forecast the contribution to be made in the future in cash or by taxes, fees, assessments or other sources of revenue derived from the property owner towards the capital costs of the necessary public service covered by the development fee and shall include these contributions in determining the extent of the burden imposed by the development. Beginning August 1, 2014, for purposes of calculating the required offset to development fees pursuant to this subsection, if a municipality imposes a construction contracting or similar excise tax rate in excess of the percentage amount of the transaction privilege tax rate imposed on the majority of other transaction privilege tax classifications, the entire excess portion of the construction contracting or similar excise tax shall be treated as a contribution to the capital costs of necessary public services provided to development for which development fees are assessed, unless the excess portion was already taken into account for such purpose pursuant to this subsection.”*

The City of Flagstaff does not have a higher than normal construction excise tax rate, so the required offset described above is not applicable. The required forecast of non-development fee revenue that might be used for growth-related capital costs is shown in below. There are no General Fund revenues used for growth-related capital expenditures. The City of Flagstaff allocates the Secondary Property Tax revenue to a Debt Service fund. These funds are available for capital investments; however, **the City of Flagstaff directs revenue from the Secondary Property Tax to non-development fee eligible capital needs.** The forecast of revenue to be generated from the Secondary Property Tax was calculated by the City, and is shown in Figure B43.

**Figure B43: Five-Year Revenue Projection, Secondary Property Tax**

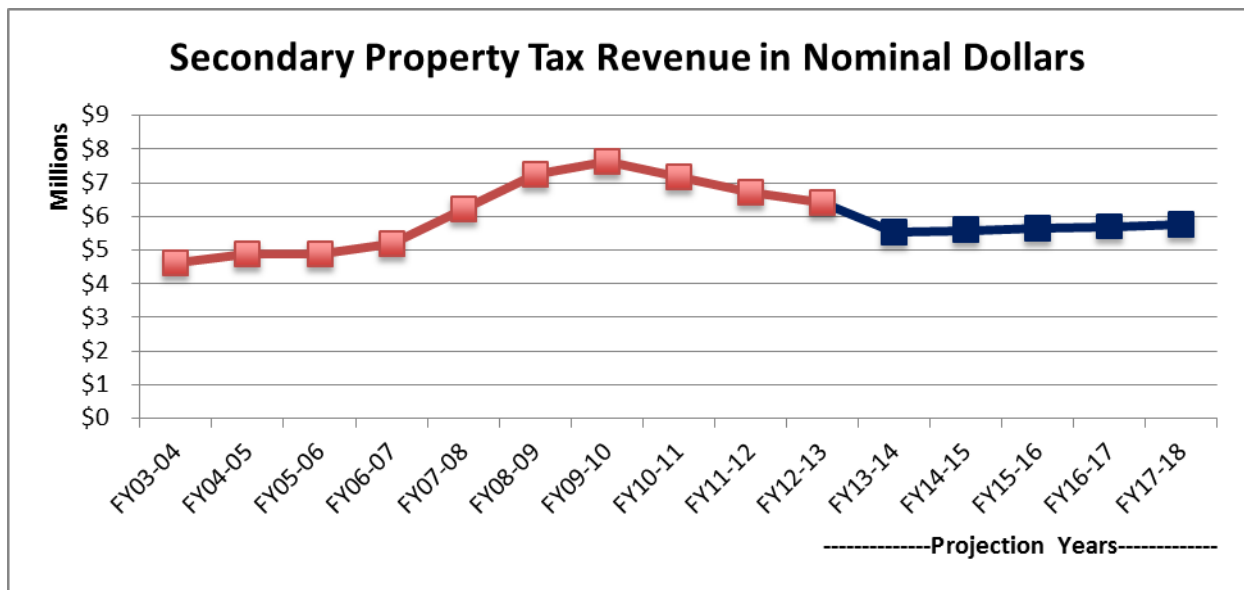
*Forecast of Revenues in Nominal Dollars*

	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18
Secondary Property Taxes Levied for Debt Service	\$5,530,453	\$5,585,758	\$5,641,615	\$5,698,031	\$5,755,012

Source: City of Flagstaff, Finance Department

The figure below charts ten years of past revenues from the Secondary Property Tax, as reported in the City of Flagstaff Comprehensive Annual Financial Reports, and the revenue projections for the next five fiscal years. As shown, for the next five years, the City projects annual revenue generated by the Secondary Property Tax will remain relatively flat.

**Figure B44: Secondary Property Tax Revenue Trend and Projections**



Source: City of Flagstaff, Finance Department

## APPENDIX C – LAND USE ASSUMPTIONS

Arizona Revised Statutes (ARS) 9-463.05 (T)(6) requires the preparation of a Land Use Assumptions document, which shows:

*“projections of changes in land uses, densities, intensities and population for a specified service area over a period of at least ten years and pursuant to the General Plan of the municipality.”*

TischlerBise prepared current demographic **estimates** and future development **projections** for both residential and nonresidential development that will be used in the Infrastructure Improvement Plan (IIP) and calculation of the development fees. Current demographic data estimates for FY12-13 are used in calculating levels-of-service (LOS) provided to existing development in the City of Flagstaff. Although long-range projections are necessary for planning infrastructure systems, a shorter period of five to ten years is critical for the development fee analysis. Arizona’s Development Fee Act requires fees to be updated at least every five years and limits the Infrastructure Improvements Plan to a maximum of ten years. The estimates and projections presented herein were calculated from data used by the City of Flagstaff to develop the 2012 Regional Plan Update for the City of Flagstaff planning region.

### SUMMARY OF GROWTH INDICATORS

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Development projections and growth rates are summarized in Figure C45. These projections will be used to estimate development fee revenue and to indicate the anticipated need for growth-related infrastructure. However, development fee methodologies are designed to reduce sensitivity to accurate development projections in the determination of the proportionate share fee amounts. If actual development is slower than projected, development fee revenues will also decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, the City will receive an increase in development fee revenue, but will also need to accelerate capital improvements to keep pace with development.

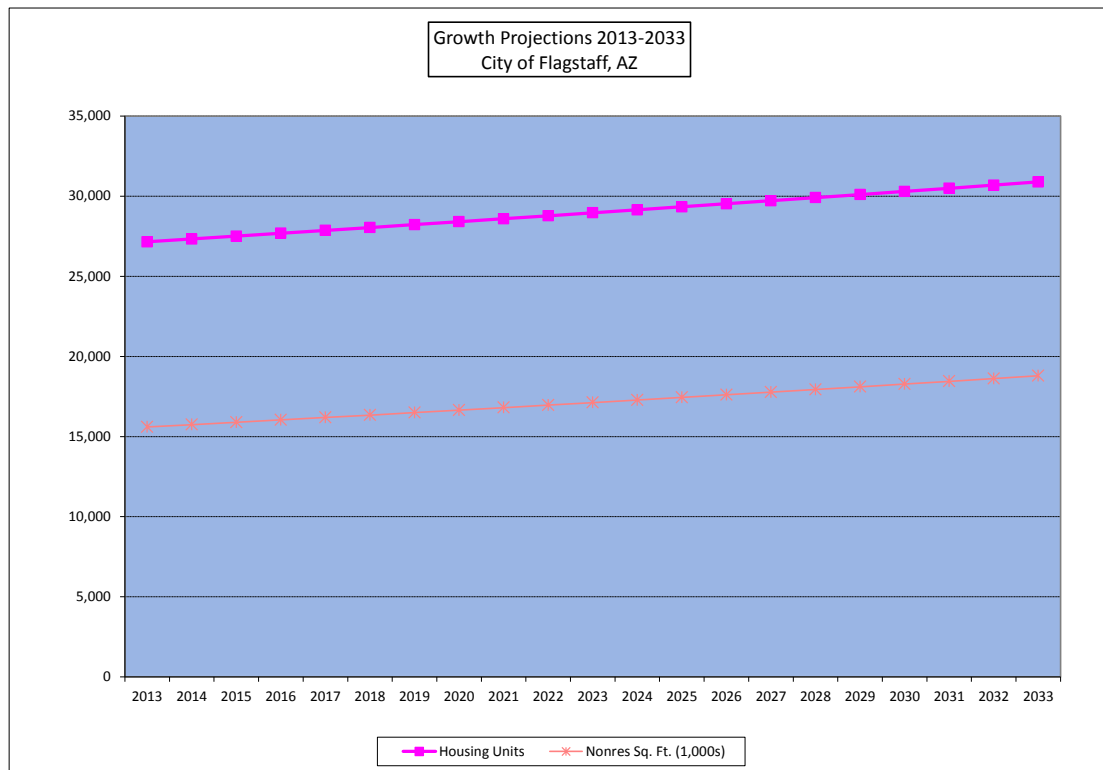
Development projections are calculated through a three-step process. First, TischlerBise used historic population, housing, and employment data from the U.S. Census Bureau, and building permit data provided by the City of Flagstaff to calculate base year 2013 estimates. Second, TischlerBise had discussions with staff and used projections developed by the City of Flagstaff for the 2012 Regional Plan Update process. The City of Flagstaff calculated 20-year projections for population, housing, employment, and land use, based on 2010 decennial census counts and an internally designed high population growth assumption. Finally, TischlerBise applied exponential growth formulas based on the City of Flagstaff 2030 projections of year-round population, housing units, and jobs to estimate projections for each year beyond the base year 2013. See Figure C45 below for a summary of the base year estimates and 20-year projections. The City of Flagstaff is expected to add an average of 187 housing units and 160,000 square feet of non-residential floor area annually.

The City of Flagstaff calculated projections based on two growth scenarios using a low annual growth rate of 0.79 percent and a high annual growth rate of 1.06 percent. Housing unit, employment and land development projections for the 2012 Regional Plan Update were all calculated based on the high annual growth rate to ensure the City of Flagstaff is as prepared as possible to absorb potential growth.

Figure C45: Summary of Development Projections and Growth Rates

	Five-Year Increments ==>													Cumulative Increase	Avg. Ann. Increase
	Base Yr 2013	1 2014	2 2015	3 2016	4 2017	5 2018	6 2019	7 2020	8 2021	9 2022	10 2023	15 2028	20 2033	2013-2033	2013-2033
RESIDENTIAL DEVELOPMENT															
Housing Units															
Single Family	16,833	16,942	17,052	17,162	17,273	17,385	17,497	17,610	17,724	17,839	17,954	18,542	19,148	2,315	116
Multifamily	10,324	10,391	10,458	10,526	10,594	10,662	10,731	10,800	10,870	10,940	11,011	11,371	11,743	1,419	71
TOTAL	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
Nonres Floor Area (1,000 SF)															
Commercial (1,000 SF)	4,195	4,234	4,273	4,313	4,353	4,393	4,434	4,474	4,515	4,557	4,599	4,816	5,044	849	42
Office/Instit (1,000 SF)	6,084	6,139	6,193	6,248	6,303	6,359	6,416	6,473	6,530	6,588	6,648	6,948	7,262	1,178	59
Industrial/Flex (1,000 SF)	5,316	5,370	5,424	5,478	5,532	5,588	5,643	5,700	5,757	5,815	5,873	6,172	6,487	1,171	59
TOTAL	15,595	15,742	15,890	16,038	16,188	16,339	16,493	16,648	16,802	16,960	17,119	17,936	18,793	3,198	160
ANNUAL INCREASES (City Limits)														2013-2033	
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual	
Housing Units		176	177	178	179	180	181	182	184	185	186	192	198	187	
Nonres Floor Area (1,000 SF)		147	148	148	150	151	154	155	154	158	160	165	175	160	

Source: City of Flagstaff; TischlerBise



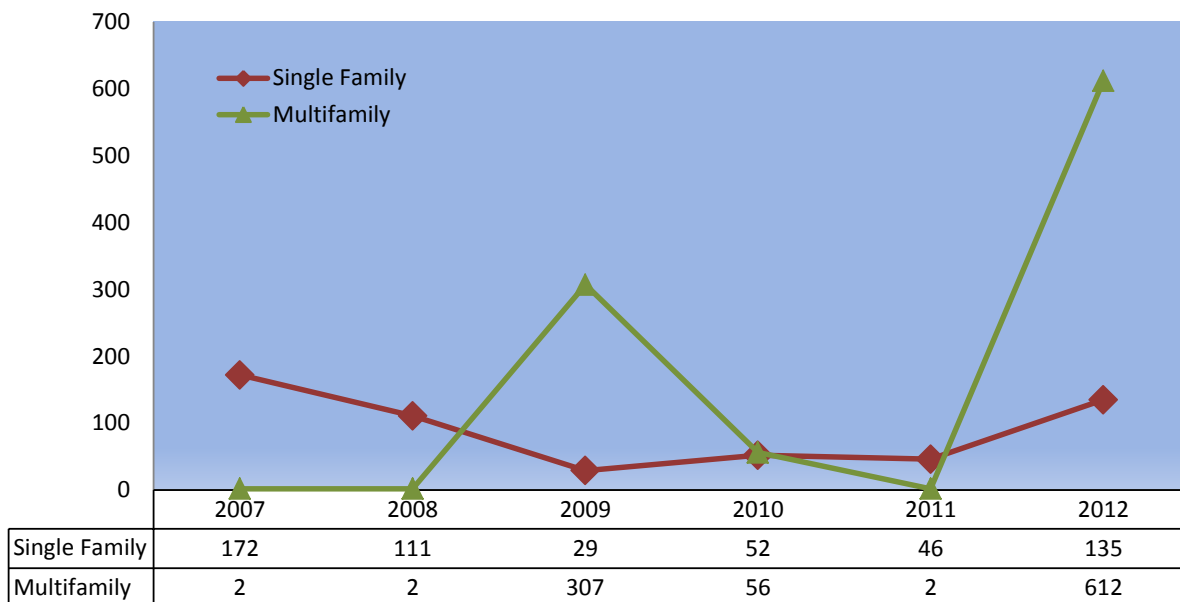
## RESIDENTIAL DEVELOPMENT

Current estimates and future projections of residential development are detailed in this section, including population and housing units by type.

### Current Housing Unit Estimates

Development fees require an analysis of current levels of service. For residential development, current levels of service are determined using estimates of population and housing units. To estimate current housing units in the City of Flagstaff, TischlerBise obtained building permit information from the City. This information is then used to determine a base year estimate of housing units. Figure C46 shows residential building permit trends by number and type of housing unit for the City of Flagstaff.

**Figure C46: Residential Building Permits in the City of Flagstaff, 2007-2012**



Source: City of Flagstaff

Residential housing units, and building permit trends, by type are shown in Figure C47 below. To calculate total housing units, the distribution of 63 percent single family and 37 percent multifamily units in the City was calculated from the 2011 U.S. Census American Community Survey (ACS), 1-Year Estimates for *Units in Structure*. This distribution was applied to the total number of units reported by the 2010 decennial census to get 16,600 single family units, and 9,654 multifamily units in the City of Flagstaff in 2010.

Figure C47: Residential Housing Units in the City of Flagstaff

<b>Building Permits [1]</b>		<b>2010*</b>	<b>2011*</b>	<b>2012*</b>	<b>Total</b>	<b>Average</b>
Single Family [2]		52	46	135	233	78
Multifamily [3]		56	2	612	670	223
Total		108	48	747	903	
<i>*Issued during calendar year</i>						
		<b>Base Year</b>				<b>2013</b>
<b>Housing Units [4]</b>		<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Distribution<sup>^</sup></b>
Single Family	63%	16,600	16,652	16,698	16,833	62%
Multifamily	37%	9,654	9,710	9,712	10,324	38%
Total		26,254	26,362	26,410	27,157	
<i><sup>^</sup> Reflects the addition of issued permits</i>						

- [1] City of Flagstaff Community Development Department, Monthly Construction Permits  
 [2] Single Family includes detached, attached, and mobile homes  
 [3] Multifamily includes structures with 2 or more units  
 [4] U.S. Census Bureau, 2010 Decennial Census: DP1  
 [5] U.S. Census Bureau, 2011 American Community Survey 1-Year Estimates: Table B25024

To estimate 2011, 2012, and 2013 housing units, the building permits issued each year were added to the housing units, starting with the 2010 census count. TischlerBise estimates the City of Flagstaff had 27,157 housing units at the start of base year 2013. The addition of 612 multifamily units in 2012 changed the 2013 distribution of housing units by type to 62 percent single family and 38 percent multifamily.

### Current Household Size and Peak Population

According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. Development fees often use per capita standards and persons per housing unit (PPHU) or persons per household (PPH) to derive proportionate share fee amounts. When PPHU is used in the fee calculations, infrastructure standards are derived using year-round population. When PPH is used in the fee calculations, the development fee methodology assumes a higher percentage of housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards. TischlerBise recommends that development fees for residential development in the City of Flagstaff be imposed according to the number of persons per household. This methodology recognizes the impacts of seasonal population peaks.

Persons per household requires data on population in occupied units and the types of units by structure. The 2010 decennial census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which has limitations due to sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses). For development fees in Flagstaff, “single family” residential units include detached (both stick-built and manufactured) and attached (commonly known as townhouses, which share a common sidewall, but are constructed on an individual parcel of land). The second residential category includes duplexes and all other structures with two or more units on an individual parcel of land. (Note: housing unit estimates from the ACS will not equal decennial census counts of units. These data are used only to derive the custom PPH factors for each type of unit).

Figure C48 below shows the ACS 2011 1-Year Estimates for the City of Flagstaff. To calculate the PPH, persons (57,726) is divided by households (21,534). Dwellings with a single unit per structure (detached, attached, and mobile homes) averaged 2.75 persons per household. Dwellings in structures with multiple units averaged 2.57 PPH. The 2011 City of Flagstaff total PPH was 2.68.

**Figure C48: Persons per Household by Type of Housing**

Units in Structure	Renter & Owner		Persons per Household	Housing Units	Persons Per Hsg Unit	Vacancy Rate
	Persons	HsehlDs				
Single Family	32,735	11,891	2.75	14,879	2.20	20%
Mobile Homes	4,358	1,601	2.72	1,703	2.56	6%
2+ Units	20,633	8,042	2.57	9,643	2.14	17%
Total	57,726	21,534	2.68	26,225		
				Vacant/Seasonal HU	4,691	

2011 Summary by Type of Housing	Persons	House- holds	PPH	Housing Units	PPHU	Housing Mix
Single Family [1]	37,093	13,492	2.75	16,582	2.24	63%
Multifamily [2]	20,633	8,042	2.57	9,643	2.14	37%
Subtotal	57,726	21,534	2.68	26,225	2.20	Vacancy
Group Quarters	8,178					Rate
TOTAL	65,904	21,534		26,225		17.9%

Source: U.S. Census Bureau, 2011 American Community Survey 1-Year Estimates

[1] Single Family includes detached, attached, and mobile homes

[2] Multifamily includes duplex and all other units with 2 or more units per structure

## Peak Population Estimate

The first step in estimating a base year peak population is to calculate a *peak occupancy rate* using ACS estimates of housing units by occupancy. The *peak occupancy rate* is used to determine the number of *peak households* (occupied housing units during seasonal/peak periods). Occupied and vacant housing unit estimates, shown in Figure C49, are from the 2011 ACS 1-Year Estimates, which is the most recent information available for the City. Due to data availability, the share of vacant units counted as “vacant units for seasonal, recreational, or occasional use” is from the ACS 3-Year Estimates, and was used to estimate the percentage of 2011 vacant units that were occupied by seasonal population. Based on the ACS 3-Year Estimates, 51 percent (2,398) of the estimated 4,691 vacant units are seasonally populated. Peak households (23,932) is the sum of year-round occupied households (21,534) and seasonally populated units (2,398). The 2011 Peak Occupancy Rate of 91 percent is the relationship of peak households (23,932) to total housing units (21,534 occupied plus 4,691 vacant). Using peak households reduces the vacancy rate from a year-round rate of 17.9 percent to a seasonal rate of 8.7 percent.

**Figure C49: Household Occupancy Rates for City of Flagstaff**

2011 Peak Households Estimate	Housing Units			Peak Households		Peak Occ. Rate
	Occupied	Vacant	Seasonal*	Count	Share	
Single Family	11,891	2,988	1,535	13,426	56%	90%
Mobile Homes	1,601	102	48	1,649	7%	97%
2+ Units	8,042	1,601	815	8,857	37%	92%
Total	21,534	4,691	2,398	23,932	100%	91%

Source: U.S. Census Bureau, 2011 American Community Survey 1-Year Estimates

\*Seasonal share of vacant units estimated from U.S. Census Bureau, 2011 ACS 3-Year Estimates

Next in the process to estimate a base year peak population is to apply the peak occupancy rates by unit type to the 2010-2012 residential building permit data from Figure C46 above to determine how many peak households have been added since the 2010 decennial census count. According to the 2011 ACS 1-Year Estimates, occupied single family units are 63 percent of the City's households. The distribution is applied to the 2010 decennial census count of peak households (i.e., 91% of total housing units) to calculate an estimate of 14,969 single family households and 8,922 multifamily households. The annual units added are adjusted by the peak occupancy rates calculated in Figure C49 above, and then added to the 2010 estimate to determine the 2013 peak households by type. See Figure C50 for additional detail.

**Figure C50: Peak Households**

2010 Peak Households Estimate	Peak		Peak Households Added Annually [2]			2013 Peak Households
	Households [1]	Occupancy	2010	2011	2012	
Single Family	14,969	91%	47	42	123	15,181
Multifamily	8,922	92%	52	2	563	9,539
Total	23,891	91%	99	44	686	24,720

[1] U.S. Census Bureau, 2010 Decennial Census

[2] City of Flagstaff Community Development Department, Monthly Construction Permits

The last step in calculating a base year peak population for the City of Flagstaff is to apply the persons per household by housing type (see Figure C48) to the base year peak households by housing type (see Figure C50). The final 2013 peak population estimate for City of Flagstaff is the population in single family and multifamily households (66,267) plus the estimated 2013 population living in *group quarters*, which includes Northern Arizona University student housing. As part of the 2012 Regional Plan Update, The City of Flagstaff used 2010 decennial census as the base year figures from which to calculate a projected annual *group quarters* population growth rate of 2.41 percent (assuming the high population growth scenario used for other demographic and housing projections). As shown in Figure C51, the 2013 *group quarters* population estimate of 8,674 is added to the peak households population estimate of 66,267 to determine a base year 2013 peak population of 74,941 persons in the City of Flagstaff.

Figure C51: Peak Population Estimate

2013 Peak Households Estimate	Persons Per Household [1]	Peak	
		Households	Population
Single Family	2.75	15,181	41,736
Multifamily	2.57	9,539	24,474
Total	2.68	24,720	66,267
		Group Quarters [2]	8,674
		Total Base Year Peak Population	74,941

[1] Shown as rounded numbers

[2] City of Flagstaff 2012 Regional Plan Update,  
high population growth scenario

## Peak Population and Housing Unit Projections

TischlerBise analyzed recent growth trends, reviewed the City of Flagstaff 2012 Regional Plan Update data, and had discussions with staff. Based on the high population growth scenario and 2010 decennial census counts, the City of Flagstaff projects a 2030 housing unit estimate of 30,300 units, which equates to an annual growth rate of 0.72 percent. TischlerBise adjusted the annual growth rate to reflect the 2013 base year housing unit estimate of 27,157. The adjusted growth rate of 0.65 percent was used to calculate an estimate of housing units for each year past 2013. Housing units were divided into single family and multifamily unit estimates as described above, and then peak occupancy rates and persons per household factors were applied to the annual housing units added to calculate annual additional peak population in households. See Figure C52 for a summary of the projections.

Included in the City of Flagstaff 2012 Regional Plan Update demographic projections was the assumption that the *group quarters* population within the City (and including Northern Arizona University student housing) would grow at an annual rate of 2.41 percent, to reach a 2030 projected total of 13,000 persons. The annual growth rate was applied to the 2010 decennial census *group quarters* population count of 8,076 to estimate a *group quarters* population for each year beyond 2010. See Figure C52 for a summary of the projections.

Figure C52: Peak Population and Housing Unit Projections

	Decennial Census [1]	Estimates [2]				Projection [3]		Exponential Growth Rates	
	2010	2011	2012	2013	2018	2023	2030	2010-30	2013-30
Housing Units	26,254	26,362	26,410	27,157	28,047	28,965	30,300	0.72%	0.65%
Peak Population in Households [4]			64,428	66,267	69,788	72,021	75,271		0.75%
Group Quarters	8,076	8,271	8,470	8,674	9,770	11,005	13,000	2.41%	2.41%
Peak Population [4]			72,898	74,941	79,558	83,025	88,271		0.97%

[1] U.S. Census Bureau, 2010 Decennial Census

[2] Estimates calculated using the 2010-2030 Exponential Growth Rate

[3] 2030 projections from City of Flagstaff 2012 Regional Plan Update, high population growth scenario

[4] TischlerBise

Annual population projections for the City of Flagstaff are the sum of the peak population in households and the group quarter population. The 2013 base year estimate of 74,941 and the 2030 peak population projection of 88,271 persons were used to calculate an exponential growth rate of 0.97 percent for the City of Flagstaff peak population.

### Year-Round Population Estimates and Projections

The City of Flagstaff used U.S. Census Bureau 2010 decennial census data as the foundation for the City's 2012 Regional Plan Update. Arizona Department of Administration data from December of 2012 was used to calculate 2012 base year estimates. Intercensal population estimates produced by the Arizona Department of Administration demonstrate an average annual growth rate for the City of Flagstaff that has slowed from a 2007 peak of 3.3 percent and a 2010 peak of 2.2 percent. While the City of Flagstaff does not expect to return to past growth rates, it does expect annual growth well into the future, and that the City will host a growing share of the Coconino County population. Population projections calculated from the decennial census assume a sustained annual growth rate of 1.06 percent and a 2030 population of 81,300.

To calculate a 2013 year-round population, TischlerBise used annual Arizona Department of Administration Interim Intercensal July Population Estimates for 2010, 2011, and 2012. Next, the annual exponential growth rate of 1.06 percent was calculated from the 2010 and 2030 populations used by City of Flagstaff for the high growth scenario. According to the high growth scenario assumptions, the 2013 City of Flagstaff population is 67,024. The annual exponential growth rate of 1.14 percent was calculated from the 2013 population estimate and the 2030 projection, and then applied to each projection year past 2013 to match the City of Flagstaff projected 2030 population of 81,300. Figure C53 presents a summary of the population projections for the City of Flagstaff and Coconino County.

**Figure C53: Population Estimates and Projections for City of Flagstaff**

	April Census [1]	Annual July Population Estimates [2]				Population Projections [3]			Exponential Growth Rates	
	2010	2010	2011	2012	2013	2018	2023	2030	2010-30	2013-30
City of Flagstaff	65,870	65,985	66,013	66,322	67,024	70,941	75,086	81,300	1.06%	1.14%
Coconino County	134,421	134,679	134,162	134,313	135,394	141,632	148,157	157,800	0.80%	0.90%
City Share	49.0%	49.0%	49.2%	49.4%	49.5%	50.1%	50.7%	51.5%		

[1] U.S. Census Bureau, 2010 Decennial Census

[2] Arizona Department of Administration, Interim Intercensal Population Estimates

[3] 2030 population projection from City of Flagstaff 2012 Regional Plan Update, high population growth scenario

Year-round population estimates and projections are presented here to demonstrate the difference in growth patterns for the year-round (1.14%) and peak populations (0.97%) of the City.

### Population and Residential Development Summary

Peak Population and housing unit projections are used to illustrate the possible future pace of service demands, revenues, and expenditures. As these factors will vary to the extent that future development varies, there will be virtually no effect on the actual amount of the development fee. See Figure C54 below for a summary of population and housing unit projections.

Figure C54: Population and Housing Unit Projections in the City of Flagstaff, 2013-2033

	Five-Year Increments ==>													Cumulative Increase	Avg. Ann. Increase
	Base Yr 2013	1 2014	2 2015	3 2016	4 2017	5 2018	6 2019	7 2020	8 2021	9 2022	10 2023	15 2028	20 2033	2013-2033	2013-2033
SUMMARY OF DEMAND PROJECTIONS (City Limits)															
TOTAL PEAK POPULATION	74,941	76,931	77,576	78,228	78,889	79,558	80,234	80,918	81,611	82,314	83,025	86,723	90,670	15,729	786
TOTAL HOUSING UNITS	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
RESIDENTIAL DEVELOPMENT															
Housing Units															
Single Family	16,833	16,942	17,052	17,162	17,273	17,385	17,497	17,610	17,724	17,839	17,954	18,542	19,148	2,315	116
Multifamily	10,324	10,391	10,458	10,526	10,594	10,662	10,731	10,800	10,870	10,940	11,011	11,371	11,743	1,419	71
TOTAL	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
														2013-2033	
ANNUAL INCREASES (City Limits)	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual	
Peak Population		1,990	645	652	661	669	676	684	693	703	711	759	810	786	
Housing Units		176	177	178	179	180	181	182	184	185	186	192	198	187	

Source: City of Flagstaff; TischlerBise

## NONRESIDENTIAL DEVELOPMENT

### Employment Estimates and Projections

In addition to data on residential development, the calculation of development fees requires data on nonresidential square footage and employment (number of jobs) in the City of Flagstaff.

TischlerBise analyzed recent employment trends, reviewed data provided by the City of Flagstaff, and had discussions with staff. According to the analysis conducted by the City of Flagstaff, the City historically hosts between 60 and 65 percent of all Coconino County employment. The City expects this trend to continue well into the future. See Figure C55 below for additional information on County and City employment trends. According to the City of Flagstaff, 2010 employment in the City was approximately 37,100. The city projects 2030 employment will reach 44,600, based on the high population growth scenario used for the 2012 Regional Plan Update. TischlerBise used 2010 and 2030 data to calculate an exponential employment growth rate of 0.92 percent for the City and 0.69 percent for the County. Employment estimates and projections between 2010 and 2030 were calculated with exponential growth rates. TischlerBise estimates the City of Flagstaff had 38,139 jobs for the base year of 2013.

**Figure C55: Employment Trends in Coconino County and City of Flagstaff**

	City of Flagstaff Estimates [1]			Employment Estimates			Employment Projections [2]			Exponential Growth Rates	
	2000	2004	2010	2011	2012	2013	2018	2023	2030	2010-30	2013-30
City of Flagstaff	38,400	39,244	37,100	37,443	37,789	38,139	39,935	41,816	44,600	0.92%	0.92%
Coconino County	58,400	62,200	61,100	61,523	61,948	62,377	64,565	66,829	70,133	0.69%	0.69%
City Share	65.8%	63.1%	60.7%	60.9%	61.0%	61.1%	61.9%	62.6%	63.6%		

[1] City of Flagstaff 2012 Regional Plan Update; based on the 2010 employment estimate from U.S. Census Bureau LEHD web-based application OnTheMap, "all jobs" plus 5% assumed undercount

[2] 2030 projections from City of Flagstaff 2012 Regional Plan Update, high population growth scenario

### Employment by Industry Type

In addition to projecting total employment, as part of the City of Flagstaff 2012 Regional Plan Update process, the City analyzed employment trends and set economic development priorities for the future. City staff made three assumptions to project employment distribution into the future. First, total employment assumes the high population growth scenario used for the 2012 Regional Plan Update. Second, as the County seat, the region will have a high percentage of government office jobs. Third, Industrial/Flex jobs will grow at a faster rate (1.00%) than Commercial/Retail jobs (0.93%) and Office/Institutional jobs (0.89%). Between 2010 and 2030, the City of Flagstaff expects to add 7,500 jobs. Figure C56 shows the incremental growth in employment by industry type.

Figure C56: Employment Distribution by Industry Type

	City of Flagstaff Estimates [1]		Base Year Employment Estimates [2]		Industry Employment Projection [3]	
	2010	2010 Share	2013	2013 Share	2030	Growth Rate
Commercial/Retail	8,162	22%	8,390	22%	9,812	0.93%
Office/Institutional	19,663	53%	20,214	53%	23,496	0.89%
Industrial/Flex	9,275	25%	9,535	25%	11,292	1.00%
<b>TOTAL</b>	<b>37,100</b>	<b>100%</b>	<b>38,139</b>	<b>100%</b>	<b>44,600</b>	<b>0.92%</b>

[1] City of Flagstaff, 2012 Regional Plan Update, high population growth scenario

[2] TischlerBise, based on 2010 distribution from the City of Flagstaff

[3] Due to development activity since the 2012 Regional Plan Update process,  
the projected industry employment figures deviate from previous assumptions

## NONRESIDENTIAL SQUARE FOOTAGE DEVELOPMENT

Job estimates are used to estimate nonresidential square footage based on nationally recognized average square feet per employee data published by The Institute of Transportation Engineers (ITE), and shown in Figure C57.

Figure C57: The Institute of Transportation Engineers, Employee and Building Area Ratios, 2012

ITE Code	Land Use / Size	Demand Unit	Weekday Trip Ends per Demand Unit*	Emp Per Employee*	Emp Per Dmd Unit**	Sq Ft Per Emp
<b>Commercial / Shopping Center</b>						
820	Average	1,000 Sq Ft	42.70	na	2.00	500
<b>General Office</b>						
710	Average	1,000 Sq Ft	11.03	3.32	3.32	301
<b>Other Nonresidential</b>						
770	Business Park***	1,000 Sq Ft	12.44	4.04	3.08	325
760	Research & Dev Center	1,000 Sq Ft	8.11	2.77	2.93	342
610	Hospital	1,000 Sq Ft	13.22	4.50	2.94	340
565	Day Care	student	4.38	26.73	0.16	na
550	University/College	student	1.71	8.96	0.19	na
530	High School	student	1.71	19.74	0.09	na
520	Elementary School	student	1.29	15.71	0.08	na
520	Elementary School	1,000 Sq Ft	15.43	15.71	0.98	1,018
320	Lodging	room	5.63	12.81	0.44	na
254	Assisted Living	bed	2.66	3.93	0.68	na
151	Mini-Warehouse	1,000 Sq Ft	2.50	61.90	0.04	24,760
150	Warehousing	1,000 Sq Ft	3.56	3.89	0.92	1,093
140	Manufacturing	1,000 Sq Ft	3.82	2.13	1.79	558
110	Light Industrial	1,000 Sq Ft	6.97	3.02	2.31	433

\* Trip Generation, Institute of Transportation Engineers, 9th Edition (2012).

\*\* Employees per demand unit calculated from trip rates, except for Shopping Center data, which are derived from Development Handbook and Dollars and Cents of Shopping Centers, published by the Urban Land Institute.

TischlerBise used 2012 factors from the ITE to calculate the total nonresidential floor area for three categories of development used for the calculation of development fees. To estimate current nonresidential floor area, 2013 job estimates by category were multiplied by ITE square feet per employee factors. It is estimated the City of Flagstaff has approximately 16 million square feet of nonresidential space in active use. The estimated square footage in 2013 for each major category of nonresidential development is shown below in Figure C58.

**Figure C58: Estimated Employment and Nonresidential Floor Area in City of Flagstaff, 2013**

	<i>2013 Estimated Jobs</i>	<i>Square Feet Per Employee [1]</i>	<i>2013 Nonresidential Floor Area</i>	
			<i>Square Feet</i>	<i>Distribution</i>
Commercial/Retail	8,390	500	4,195,000	27%
Office/Institutional	20,214	301	6,084,359	39%
Industrial/Flex	9,535	558	5,316,636	34%
<b>TOTAL</b>	<b>38,139</b>	<b>409</b>	<b>15,595,995</b>	<b>100%</b>

[1] Trip Generation Manual, Institute of Transportation Engineers  
9th Edition (2012). Shown as rounded numbers.

### Nonresidential Floor Area and Employment Projections

Future employment growth and nonresidential development in the City of Flagstaff are projected based on information provided by City staff, and TischlerBise's analysis of past trends in the City. To project employment for the City, TischlerBise applied the industry-specific growth rates for each year beyond the base year 2013 estimates by industry category.

The projected increase in employment by industry type is then used to project growth in nonresidential square footage using the *Employee per Square Footage* data previously discussed. Results are shown in Figure C59. The City expects to add on average 386 jobs a year for the next twenty years. To keep pace with employment growth, the City should expect to add roughly 160,000 square feet of nonresidential development each year.

Figure C59: Nonresidential Floor Area and Employment Projections in City of Flagstaff, 2013-2033

	Five-Year Increments ==>													Cumulative	Avg. Ann.
	Base Yr	1	2	3	4	5	6	7	8	9	10	15	20	Increase	Increase
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2028	2033	2013-2033	2013-2033
SUMMARY OF DEMAND PROJECTIONS (City Limits)															
TOTAL JOBS	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386
NONRESIDENTIAL DEVELOPMENT															
Employment By Type															
Commercial/Retail	8,390	8,468	8,546	8,625	8,705	8,785	8,867	8,949	9,031	9,115	9,199	9,633	10,087	1,697	85
Office/Institutional	20,214	20,394	20,575	20,758	20,942	21,129	21,316	21,506	21,697	21,890	22,085	23,084	24,128	3,914	196
Industrial/Flex	9,535	9,630	9,727	9,824	9,922	10,021	10,121	10,223	10,325	10,428	10,532	11,069	11,634	2,099	105
TOTAL	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386
Nonres Floor Area (1,000 SF)															
Commercial (1,000 SF)	4,195	4,234	4,273	4,313	4,353	4,393	4,434	4,474	4,515	4,557	4,599	4,816	5,044	849	42
Office/Insttit (1,000 SF)	6,084	6,139	6,193	6,248	6,303	6,359	6,416	6,473	6,530	6,588	6,648	6,948	7,262	1,178	59
Industrial/Flex (1,000 SF)	5,316	5,370	5,424	5,478	5,532	5,588	5,643	5,700	5,757	5,815	5,873	6,172	6,487	1,171	59
TOTAL	15,595	15,742	15,890	16,038	16,188	16,339	16,493	16,648	16,802	16,960	17,119	17,936	18,793	3,198	160
ANNUAL INCREASES (City Limits)														2013-2033	
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual	
Jobs		353	356	359	362	366	369	374	375	380	383	401	420	386	
Nonres Floor Area (1,000 SF)		147	148	148	150	151	154	155	154	158	160	165	175	160	

Source: City of Flagstaff; TischlerBise

## AVERAGE DAILY VEHICLE TRIPS

Nonresidential average Daily Vehicle Trips are used for the Public Safety development fee category as a measure of demand by land use. Vehicle trips are estimated using average weekday vehicle trip ends from the reference book, *Trip Generation*, 9<sup>th</sup> Edition, published by the Institute of Transportation Engineers (ITE) in 2012. A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway).

### Trip Rate Adjustments

Trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor of 50 percent is applied to the office/institutional, and industrial/flex categories. The commercial/retail category has a trip factor of less than 50 percent because this type of development attracts vehicles as they pass-by on arterial and collector roads. For an average size shopping center, the ITE (2012) indicates that on average 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the shopping center as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor of 66 percent is multiplied by 50 percent to calculate a trip adjustment factor for commercial land use of 33 percent.

### Estimated Vehicle Trips in Flagstaff

Trip adjustment factors are used in conjunction with average weekday vehicle trip ends provided by ITE (2012) to calculate average vehicle trips in the City of Flagstaff based on existing development. Figure C60 details the calculations to determine that existing nonresidential development in the City generates an average of 102,819 vehicle trips on an average weekday. An example of the calculation is as follows for commercial land uses: 4,195 x 42.70 vehicle trips per day per 1,000 square feet x 33 percent adjustment factor = 59,112 total vehicle trips per day from commercial development in the City. The same calculation is done for each land use type.

Figure C60: Average Daily Trips from Existing Development in City of Flagstaff

Base Year	
2013	
<b>Nonresidential Vehicle Trips on an Average Weekday**</b>	
<b>Nonresidential Gross Floor Area (1,000 sq. ft.)</b>	<b>Assumptions</b>
Commercial/Retail	4,195
Office/Institutional	6,084
Industrial/Flex	5,316
<b>Average Weekday Vehicle Trips Ends per 1,000 Sq. Ft.**</b>	
Commercial	42.70
Office/Institutional	11.03
Industrial/Flex	3.82
<b>Nonresidential Vehicle Trips on an Average Weekday</b>	
Commercial	59,112
Office/Institutional	33,553
Industrial/Flex	10,154
<b>Total Nonresidential Trips</b>	<b>102,819</b>

\*\*Trip rates are from the Institute of Transportation Engineers. (2012). *Trip Generation Manual 9th Edition*

## DEMAND INDICATORS BY SIZE OF DETACHED HOUSING

As part of the development fee effort for the City of Flagstaff, TischlerBise further analyzed demographic data to present the option to refine the development fee schedule to be more progressive for residential development. This can be done by developing fees by size of housing unit based on bedroom count. Household size can be derived using custom tabulations of demographic data by bedroom range from survey responses provided by the U.S. Census Bureau in files known as Public Use Micro-data Samples (PUMS). Because PUMS data are only available for areas of roughly 100,000 persons, the City of Flagstaff is in Arizona Public Use Micro-data Area (PUMA) 0400. Data is first analyzed for the PUMA area and then calibrated to conditions in the City of Flagstaff.

TischlerBise used 2011 ACS 1-Year Estimates to derive persons per household by number of bedrooms. As shown in Figure C61, TischlerBise derived trip generation rates and average persons, by bedroom range, using the number of persons. Recommended multipliers were scaled to make the average value by type of housing for Arizona PUMA 0400 match the average value derived from ACS data specific to Flagstaff. As the number of bedrooms increases so do the persons per household.

**Figure C61: Average Persons per Household by Bedroom Range in City of Flagstaff**

	AZ PUMA 0400 [1]		Recommended Multipliers for Municipality [2]
	Households	Persons	Persons per Household
Single Family 0-3 Bdrms	457	1,258	2.62
Single Family 4+ Bdrms	109	376	3.29
<i>Single Family Subtotal</i>	<i>566</i>	<i>1,634</i>	<i>2.75</i>
Multi family Total	102	220	2.57
AZ PUMA 0400 TOTAL	668	1,854	

[1] American Community Survey, Public Use Microdata Sample for AZ PUMA 0400 (unweighted data for 2011).

[2] Recommended multipliers are scaled to make the average value by type of housing for AZ PUMA 0400 match the average value for Flagstaff, derived from American Community Survey 2011 data, with persons adjusted to the Citywide average of 2.75 persons per single family household.

## LAND USE ASSUMPTIONS SUMMARY

Provided on the next page is a summary of annual demographic and development projections to be used for the development fee study. Base year estimates for 2013 are used in the development fee calculations. Development projections are used to illustrate a possible future pace of service demands and cash flows resulting from revenues and expenditures associated with those service demands.

Figure C62: Summary – City of Flagstaff Land Use Assumptions, 2013-2033

		Five-Year Increments ==>												Cumulative	Avg. Ann.
	Base Yr	1	2	3	4	5	6	7	8	9	10	15	20	Increase	Increase
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2028	2033	2013-2033	2013-2033
SUMMARY OF DEMAND PROJECTIONS (City Limits)															
TOTAL PEAK POPULATION	74,941	76,931	77,576	78,228	78,889	79,558	80,234	80,918	81,611	82,314	83,025	86,723	90,670	15,729	786
TOTAL HOUSING UNITS	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
TOTAL JOBS	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386
RESIDENTIAL DEVELOPMENT															
Housing Units															
Single Family	16,833	16,942	17,052	17,162	17,273	17,385	17,497	17,610	17,724	17,839	17,954	18,542	19,148	2,315	116
Multifamily	10,324	10,391	10,458	10,526	10,594	10,662	10,731	10,800	10,870	10,940	11,011	11,371	11,743	1,419	71
TOTAL	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
NONRESIDENTIAL DEVELOPMENT															
Employment By Type															
Commercial/Retail	8,390	8,468	8,546	8,625	8,705	8,785	8,867	8,949	9,031	9,115	9,199	9,633	10,087	1,697	85
Office/Institutional	20,214	20,394	20,575	20,758	20,942	21,129	21,316	21,506	21,697	21,890	22,085	23,084	24,128	3,914	196
Industrial/Flex	9,535	9,630	9,727	9,824	9,922	10,021	10,121	10,223	10,325	10,428	10,532	11,069	11,634	2,099	105
TOTAL	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386
Nonres Floor Area (1,000 SF)															
Commercial (1,000 SF)	4,195	4,234	4,273	4,313	4,353	4,393	4,434	4,474	4,515	4,557	4,599	4,816	5,044	849	42
Office/Instit (1,000 SF)	6,084	6,139	6,193	6,248	6,303	6,359	6,416	6,473	6,530	6,588	6,648	6,948	7,262	1,178	59
Industrial/Flex (1,000 SF)	5,316	5,370	5,424	5,478	5,532	5,588	5,643	5,700	5,757	5,815	5,873	6,172	6,487	1,171	59
TOTAL	15,595	15,742	15,890	16,038	16,188	16,339	16,493	16,648	16,802	16,960	17,119	17,936	18,793	3,198	160
Nonresidential Trips															
Commercial (1,000 SF)	59,112	59,661	60,211	60,767	61,331	61,895	62,472	63,043	63,621	64,213	64,805	67,862	71,068	11,956	598
Office/Instit (1,000 SF)	33,553	33,854	34,155	34,458	34,764	35,070	35,385	35,700	36,013	36,333	36,661	38,318	40,052	6,499	325
Industrial/Flex (1,000 SF)	10,154	10,256	10,360	10,463	10,567	10,672	10,779	10,887	10,996	11,106	11,217	11,788	12,390	2,236	112
TOTAL Nonresidential Trips	102,819	103,771	104,726	105,688	106,662	107,637	108,636	109,630	110,630	111,652	112,683	117,968	123,510	20,691	1,035
ANNUAL INCREASES (City Limits)														2013-2033	
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual	
Peak Population		1,990	645	652	661	669	676	684	693	703	711	759	810	786	
Housing Units		176	177	178	179	180	181	182	184	185	186	192	198	187	
Jobs		353	356	359	362	366	369	374	375	380	383	401	420	386	
Nonres Floor Area (1,000 SF)		147	148	148	150	151	154	155	154	158	160	165	175	160	

Source: City of Flagstaff; TischlerBise

